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ABSTRACT

A theoretical basis and practical guidelines for developing a wholistic program in environmental values education (EVE) are provided in this guide. Part I approaches EVE from a philosophical perspective and provides information related to the nature of human values and behavior, EVE strategies, and the development of a positive environmental ethic. Part II contains detailed, practical steps for designing, implementing, and evaluating an EVE program. Experiential exercises are included for use at the primary and secondary levels. A teacher training model is explained and is accompanied by a self-evaluation form that measures competencies in the theory and methods of EVE. Also included are lists of curriculum materials and suggested readings in the areas of values education and environmental ethics. (ML)

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PREFACE

The various international and regional meetings on environmental education (EE) organized by Unesco since 1975, with the co-operation of the United Nations Environment Programme (UNEP), have stressed the importance of developing appropriate content and methods for the incorporation of an environmental dimension into various levels and types of education. In this perspective, special emphasis was placed on content and methods which stimulate development of interdisciplinary teaching-learning approaches oriented towards the solution of concrete environmental problems.

In the light of these considerations, the Unesco-UNEP International Environmental Education Programme (IEEP) has undertaken the preparation of a series of publications dealing with strategies for the integration of an environmental dimension into school and out-of-school education. Among the principal questions related to the content of EE is that of the treatment of environmental values during educational processes. In fact, the development of a spirit of responsibility and solidarity enabling society to cope with environmental problems implies, besides proper knowledge and skills, new attitudes and behavioural patterns towards the environment. These changes cannot be really brought about until most members of a given society have freely interiorized more constructive attitudes on values, which will constitute the basis for a self-discipline ruling relationships between man and the environment. EE should, with this aim in view, strive to analyse and correlate the concerns and values of individuals and communities insofar as these affect the environment.

This guide on environmental values education aims at providing basic theoretical and practical knowledge for the purpose of stimulating teachers as well as specialists in charge of curricula and materials development in the field of EE, to explicitly introduce into their programmes and educational practices, together with cognitive content, the treatment of environmental values.

The guide comprises two parts. The first develops fundamentals of values education - the nature of values, principal environmental values education strategies, as well as orientations for a holistic approach to environmental ethics. The second provides selected examples of the value components of various environmental problems, which can be handled in primary and secondary education.

The breadth and complexity of environmental problems, particularly in which concerns their value implications, should be emphasized. The teacher and education specialists are encouraged to use the proposed content, methods and examples in a critical spirit, as a source of inspiration for conceiving original developments adapted to the particularities of their cultural and natural environments.

The guide has been prepared in the framework of the IEEP, by Michael J. Caduto, a well-known international consultant in the field of EE, and currently affiliated with the Vermont Institute of Natural Science, Woodstock, Vermont, USA.

***

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FOREWORD

This book provides the reader with the theoretical understanding and practical tools for developing an integrative program in environmental values education (EVE). Two books are found here. Part I tells why environmental values education is important and provides a basic understanding of human values and behavior. It then outlines the status of EVE theories and methods and suggests a wholistic approach for fostering environmentally positive values and behavior among learners. Part II contains detailed, practical steps for teachers to take when designing, implementing and evaluating an EVE program, and a diverse set of experiential exercises that can be adapted to the specific needs of the learners and educational setting. A teacher training model and self-evaluation form in the theory and methods of EVE concludes this section. Finally, a list of curriculum materials and further suggested reading in environmental values education is included.

With each passing decade it becomes more evident that lasting, long-term solutions to environmental problems can only come from a commitment, on the part of individuals and groups, to pursue positive environmental lifestyles and policies - ones that will preserve the ecological integrity of our planet. Here a plan is laid to nurture an environmental ethic, a synthesis of values and actions that strive for a loving and just world order. This end is only possible through the lives of whole, healed individuals, who are able and willing to look beyond their own lives and to work for the welfare of society and the environment. The fulfillment and evolution of every person is essential to the environmental well-being of the Earth.

The author hopes that *A Guide on Environmental Values Education* will be found valuable by those who believe that values are an essential and legitimate subject of study throughout our lives. If the reader is interested in considering each learner as an individual to be enriched and nourished, who in turn will want and be able to enrich and nourish other people and the Earth, then read on.

A considerable debt is owed to Dr. Luis Albala-Bertrand of UNESCO in Paris, who encouraged me to develop this book for an international audience and gave significant support throughout its preparation.

I am most grateful to Dr. William Stapp of the University of Michigan, whose unflagging interest, open-mindedness and ideas have made this book possible. My appreciation to all who have given of their time and energy as reviewers during the preparation of this book : Dr. Richard Baer, Jr., Cornell University ; Dr. Dean Bennett, University of Maine ; Dr. Patricia Bidol, University of Michigan ; Charles Butterfield, Hinsdale, New Hampshire ; Dr. Clifford Knapp, Northern Illinois University ; Dr. John Kolars, University of Michigan ; Dr. James Swan, Life Systems Educational Foundation, Inc., Seattle, Washington ; Mitchell Thomashow, Antioch/New England Graduate School, Keene, New Hampshire ; Dr. Charles Yaple, State University of New York at Cortland ; and both Gail Patten and Dawn Cota, whose thorough and accurate typing have made this task much easier. A special thank you to all of my friends and family who have taught me what it means to love and be loved. And to the Benedictine Brothers at the Priory in Weston, Vermont, for the inspiration provided through their boundless conviction in Faith, Hope and Love in God, who has made all of this possible.

Michael J. Caduto
White River Junction, Vermont
February 1984

Author's Note :

The use of gender varies among individuals and cultures. In order to maintain the accuracy of word usage and meaning among the many quotes included in this book, the author has included them in their unedited form. The balance of the text has been written so as to avoid any gender bias.

INTRODUCTION

Prior to the first Earth Day in 1970, environmentalists frequently used a combination of fear, guilt and authoritarian self-righteousness in order to convince people to behave in an environmentally sound manner [1]. "Ecological crises, environmental degradation" and "over-population" were some of the often-heard sentiments that were meant to move people towards traveling, "The other fork of the road, the one that offers our only chance to reach a destination that assures the preservation of our earth" [2]. Although some people were moved by these sentiments, the close of the decade of the 1960s found many people still unaware of the human impact on our environment. The arrival of what many saw as eminent environmental apocalypse seemed impending. Earth Day 1970 was born out of an outcry for the need to draw public attention to environmental problems.

Attitudes matured in the 1970s among those working towards improving the relationship between people and their environment, and the results of their work became manifest as a greater environmental sensitivity among individuals and governments. Many people concerned about human-induced ecological imbalances chose "less to shed tears of our past mistakes than to try to understand them" [3]. Countless articles, books, classes, television documentaries and other exposés have been produced that chronicle our environmental problems. The environmental decade of the 1970s, culminating with the second Earth Day on April 22, 1980, could be summed up as an extended teach-in on environmental problems and pragmatic approaches to their solutions.

Nevertheless, it is increasingly recognized that our current environmental problems are merely symptoms of a more profound crisis.

> The relationship of man to nature is one which has evolved over the millenia. By and large it has served us well. Not only have we survived as a species, but we have greatly multiplied our numbers and in some instances prospered as well. But now the old ethic is no longer adequate. Some values must be modified or abandoned, others strengthened, adjusting to the discontinuities now confronting us. The crucial factor may not be the required changes themselves but the limited time available for man to accept and adapt to them. Changes in attitudes and values are required of people everywhere... The new ethic must encompass a new naturalism that places greater emphasis on man's harmony with nature and less on his dominance over it. [4]

Our present dilemmas are indicative of the true problems underlying the disharmonious relationship between people and their environment. One of the most basic of these problems is a crisis of personal and environmental values [5-9]. There is an urgent need for each of us to develop a wholistic ethical approach in our relationship with Earth*. Somehow the movement toward a widespread societal adoption of environmentally wise personal and social values and behavior (see Chapter 3) must be condensed into one or several generations.

Environmental educators are chief among those agents who seek to accomplish the difficult task of strengthening, reinforcing and fostering sound environmental values. When dealing with the study of natural or human-made environments, it is virtually impossible to avoid confronting the personal values of learners that form the basis of their actions.

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*Earth, as used here, encompasses all parts of our global environment, living and non-living, natural and influenced by human activity, including all peoples of the world.

This fact has caused environmental values education (EVE) to be of major importance in the general environmental education (EE) curriculum [10-17].

The formation of positive beliefs, attitudes and values concerning the environment, as the basis for assuming a wise stewardship role toward the earth, is becoming an increasingly important part of environmental education programs worldwide. Unesco's international efforts in environmental education during the 1970s, with workshops held in Belgrade, Yugoslavia (13-22 October 1975), Helsinki, Finland (24-31 January 1977) and culminating with The Intergovernmental Conference in Environmental Education in Tbilisi, Union of Soviet Socialist Republics (14-26 October 1977), placed heavy emphasis on fostering environmental ethics among learners.

Included in the recommendations of the Belgrade workshop was the intention

> that environmental education should not be confined to providing the learner with knowledge but should develop environmental attitudes and values which reflect awareness of the surrounding environment and acceptance of the responsibility for actions to resolve environmental issues and problems. [18]

Tbilisi participants left the international community with the charge

> that ethical values should be taken into consideration in developing environmental education programs.

And

> that environmental education should be aimed at creating an awareness and values directed toward improving the qualities of life. [19]

Prior to ard throughout this planning process, environmental educators in many countries were proceeding to develop environmental education programs that included a strong value/attitude component. Today, as a result, values are an important part of environmental programs in many nations.

One environmental education program, in the Occidental Highlands of Guatemala, recognizes the need to "create consciousness about [environmental problems] and to try to lead this into attitudes, behavior and decision-making capacities that contribute to conserving and improving the environment, giving man a better quality of life" [20]. In the Nordic countries environmental education emphasizes public attitudes and values ; "The aim of environmental education is to inculcate values and attitudes which are necessary to enable pupils to relate changes in the living environment to the best interests of society." [21] The aims of Dr. Irma A. Allen of Kenya, in educating nomadic people of the arid region of that country, are "to foster positive attitudes towards conservation of resources" [22]. In 1973, a group not usually oriented toward environmental concerns, The Committee of Religious Activities of Ewha Woman's University in Seoul, Korea, held a religious week for students, consisting of slide presentations, films and lectures, called "God, Nature and Human", which "helped them to understand the importance of nature conservation in God's work" [23].

Examples of other programs that are strong in environmental values education can be found in Czechoslovakia [24], Costa Rica [25], the Federal Republic of Germany [26], England [27,28], Sweden [29], the USSR [30], China [31], the Dominican Republic [32], Brazil [33], Australia [34,35], in an organized effort of the European Community [36] and in the United States [37,38,39].

Unfortunately, values education is often neglected in most EE curricula. There is an inherently controversial element involved when addressing personal values in the context of instruction that puts a heavy emphasis on objectivity. Many teachers will aspire to the laissez faire (hands-off) approach to the problem. However, it is not possible for any teacher to provide value-free instruction. Through the simple acts of setting an example that students will tend to follow (modeling) and establishing rules for conduct that is considered right or wrong (moralizing), teachers are making implicit value statements.

In seeking to consciously foster positive environmental values, environmental educators have begun using new strategies for addressing personal values, often in conjunction with

the more commonly-used methods of modeling and moralizing [40,41,42,43]. Values clarification is a strategy that was designed to have students analyze their own values, along with other possible values, and to then make a free, conscious choice among these alternatives [44]. Behavior modification is another strategy used in EVE. It assumes that changes in values follow from corresponding changes in personal behavior, brought about by positive and negative reinforcement [45].

Although these education strategies have given environmental educators new tools for use in environmental values education, this field is still young. This present teacher's guide to EVE synthesizes research findings with new ideas concerning the nature of human values as they relate to currently used and potential EVE strategies, and the circumstances under which the use of each valuing strategy would be most appropriate and effective.

Environmental education must involve a broader view of environmental values education if it is to be effective in fostering a personal environmental ethic. The nature of values, their theoretical grounding, and the dynamics of value formation and change, are crucial elements of this educational pursuit. At present there are several EVE strategies that are commonly used in EE : inculcation (moralizing and modeling), behavior modification, values clarification and values analysis are the more prominent ones.

There are many variables that affect the efficacy of each valuing method : class size, subject being addressed, background of the teacher, the learner's age and class setting are examples. Environmental educators also need to suit the EVE strategy to a learner's level of cognitive development and moral reasoning, as well as to his or her emotional and spiritual orientations. The situation in which the valuing strategy will be used is critical. Will it be an on-going process throughout a nine-month academic year, or a one-time-only visit to an EE center ? Is the learner to be approached individually or as part of a large class ? These and other factors need to be accounted for when designing an EVE program.

Each of the currently used valuing strategies has its own strengths and weaknesses that need to be considered. Any given set of circumstances may dictate the use of one, or a combination of the appropriate EVE strategies that are needed to be most effective. This guide lists parameters that can be used when deciding which valuing method is more appropriate, and effective, for a particular situation and group of learners. Although it is designed primarily for use in formal educational settings, the guide may be found useful in nonformal EE programs as well.

GUIDE TO THE TEXT

Part I lays down the theoretical groundwork for a wholistic approach to environmental values education. The introduction describes the guide. The major elements include a historical sketch of the environmental movement that documents a shifting focus to a major cause of environmental problems - unsound environmental values. A global perspective on environmental values education and the reasons why environmental education must play a major role in helping to foster sound environmental values follows. Chapter 1 focuses on the nature of human values. The basic components of values are described along with the roles these play in affecting the formation of value and behavior patterns. Value change theories are discussed, with emphasis on similarities in basic human needs as a basis for the existence of cross-culturally similar value orientations. A vital issue is covered in Chapter 2, which reviews the current strategies being used in general values education, with a summary of the status of each strategy in EVE. Chapter 3 synthesizes the findings of previous chapters with some original advances in developing a wholistic approach to environmental values education. The theoretical evolution of environmental ethics is outlined, emphasizing international concerns and emphasizing an increasing recognition of the belief that the non-human aspects of the environment possess value in themselves. A proposition is put forth for the objectivity of environmental values, leading towards a definition of an environmental ethic - possessing positive moral value.

The practical aspects of an EVE program are developed in Part II. In Chapter 4 can be found guidelines for teachers who are planning an EVE curriculum. Included are suggestions

to follow when setting educational objectives, when addressing student values in the *classroom in light of* student needs and school and community policies, when choosing appropriate EVE strategies and in evaluating student progress. Practical exercises are presented in Chapters 5 and 6, both for younger and older learners. These exercises, if not directly applicable to specific teaching situations, are meant as models which may be adapted to local conditions. Chapter 7 proposes a program of coursework and training to help teachers become proficient in environmental values education theory and methodologies. A list of additional curriculum materials is contained in the appendices.

PART I

TOWARD A WHOLISTIC APPROACH TO ENVIRONMENTAL VALUES EDUCATION

CHAPTER 1

THE NATURE OF HUMAN VALUES AND BEHAVIOR

In order to become proficient in the methods associated with environmental values education, it is necessary to understand what values are, how people form their values, and how these determine actions. In *Principles of Psychology*, James tells us that "man is an active constructor of truth, that his ideas and judgments of value are determiners of his activity, and that thought in general is ultimately connected with his behavior" [1]. A number of studies have been made into the psychology of values. Beliefs and attitudes are two main elements of a value that have been most frequently recognized.

THE NATURE OF VALUES

Rokeach defines a belief as a simple proposition, conscious or unconscious, inferred from what a person says or does, capable of being preceded by the phrase "I believe that" [2]. Every belief consists of three parts : cognitive (knowledge) ; affective (emotion) ; and conative (action). Beliefs are either true or false, but they do not necessarily bear similar commitments [3]. For instance a belief that "lying is wrong" may be more of a moving force in a person's life than the belief that "birds can fly". Three major kinds of belief are : descriptive or existential (I believe that the sun rises in the east) ; evaluative (I believe that a tree is beautiful) ; and prescriptive or exhortatory (I believe that trees should be preserved whenever possible) [4]. Beliefs are formed early in a child's life [5].

The total of a person's beliefs about physical and social reality is called a belief system [6]. A smaller aggregation of related beliefs forms an attitude. "An attitude is a relatively enduring organization of beliefs around an object or situation predisposing one to respond in some manner" [7]. Attitudes form the core of our likes and dislikes for other people and situations [8].

The important difference between a belief and an attitude is that attitudes are always accompanied by an emotional element and a behavioral tendency [9]. An example will help to clarify this relationship :

An attitude : we should all send a letter to our public officials to urge them to support laws that call for the removal of toxic waste dumps.

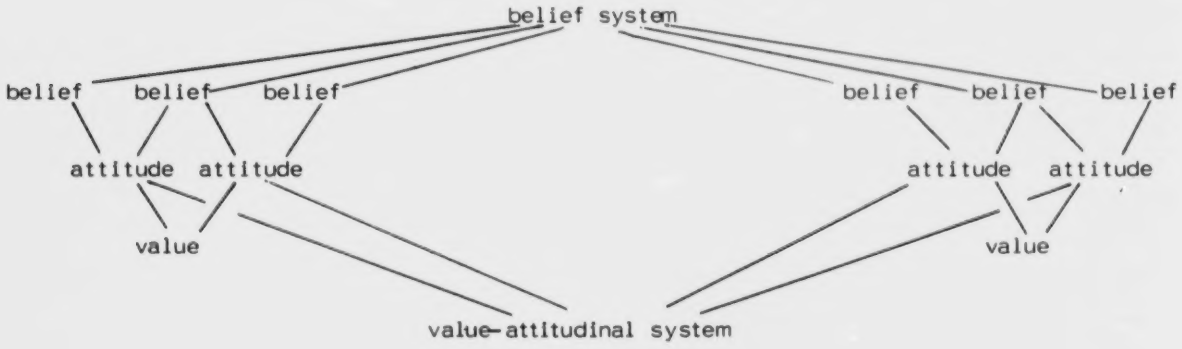
Some underlying beliefs :

1) letters to our public officials are effective ways to help form public policy ;
2) toxic waste dumps are a health hazard, therefore they should be cleaned up ;
3) we each have a duty to act on behalf of society's welfare.

Values are in turn formed by a meld of closely aligned attitudes [10]. A value is an enduring conviction that a specific mode of conduct or end state of existence is personally or socially preferable to an opposite mode of conduct or end state of existence [11,12].

Values concerned with a mode of conduct are called instrumental values (i.e. honesty, respect for the environment) and those involving end states of existence are called terminal values (i.e. a world at peace, environmental quality) [13]. A value system is a hierarchy of ideals or values, arranged in order of importance [14]. "The more widely shared a value, the greater the societal demands placed upon us and therefore the greater the 'oughtness' we experience." [15]

A Model for Rokeach's Mental Organization of Value-Attitude Systems*



Because of this hierarchical relationship an adult has hundreds or thousands of beliefs, a smaller number of attitudes and only dozens of values [16].

> The success of public policy decisions, educational programs, and other efforts dependent upon specific individual action in the realm of environmental issues may well hinge upon our understanding of the relationships among personality characteristics, attitudes, and environmental values, knowledges, and behaviors. [17]
>
> Jack Arbuthnot
> *Values and Behavior*

Contemporary theorists concerned with the relationship between values and behavior have constructed complex models which imply a strong link between several determiners of behavior including experience, knowledge, beliefs, attitudes and values [18,19,20]. In a series of related studies on the interaction between values and behavior, Rokeach found that certain values were more frequent precursors to behavior [21]. Three values were especially strong determiners of attitudes and behavior : a comfortable life, equality and salvation. Other values were also frequent predictors of behavior ; among these values were an exciting life, a world at peace, mature love, pleasure, forgiving and being capable, helpful, honest and self-controlled.

Value systems have been recognized as crucial to our feeling of self-esteem [22]. Often social values can strengthen our sense of self when the pursuit of our own personal fulfilment is socially accepted (i.e. value on family or religion) [23]. Triandis found that the norms of society are stronger for more intimate behaviors, thus those more closely aligned with our self-concept [24].

An overview of these findings indicates that since values are closely related to self-concept**, any attempt to alter values would have to be targeted directly at the specific

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* This figure is meant expressly to show qualitative relationships between beliefs, attitudes and values. No exact quantitative correlations are implied.

** Self-concept here refers to an individual's sense of self-worth, identity, abilities, values and social image.

group being addressed. Participants in a growing, ecologically-oriented activity, recycling of solid waste, were found to have very specific attitudes [25]. Recyclers tended to be more environmentally aware and active, younger and of higher social class, more liberal minded, more flexible in behaviors and beliefs, less traditionally oriented, more concerned about future consequences of present policies and they had a greater belief in their ability to exercise control over their lives. The conclusion of this study was that because of personality, attitudinal and behavioral differences, the content of public educational programs and appeals for pro-environmental action "need to be differentially tailored to meet the needs and concerns of differing target groups" [26].

> Any given act is seen as a compromise between motivation, situational conditions, available means, and the means and goals as interpreted in value terms. Motivation arises in part from biological and situational factors. Motivation and value are both influenced by the unique life history of the individual and by culture. [27]
>
> Clyde Kluckhohn

VALUE FORMATION WITHIN THE INDIVIDUAL

Determiners of Value

The development of values is primarily a socialization process ; the influence of society upon the individual determines the proliferation of values [28]. Thus it is not surprising that the "modes of life deemed desirable by individuals are the modes of life approved in the culture to which they belong" [29].

Society can be seen as a collection of closely interacting value influences that constantly mold the value system of each of us from our moment of birth. Some of the commonly recognized conveyors of value in society are :

- parents and the home environment,
- teachers, administrators and the schools,
- religious authorities,
- peers,
- government,
- the work environment,
- mass media,
- literature,
- law.

Society does not, however, imbue each of us with identical values. We are all individuals, and each of our personal worlds - our homelife, experiences in school, religious beliefs, etc. - are unique. In addition, our place within the social, economic and political hierarchy has a great effect upon value formation and later beliefs. For instance, Rokeach found significant and consistent differences in value orientations among the various sections of American society that he studied [30].

Theories of Value Formation

The literature reveals three major theories of value formation : the psychoanalytic, social learning and cognitive and moral development approaches.

Psychoanalytic theory

The psychoanalytic theory is derived mostly from Freud's work on the identification of the child with the parents in a process of cultural transmission of social values [31,32]. The

development of individual values results from the establishment of the superego, the "unconscious conscience", which is the collection of moral and ideal standards within each person. Our superego functions to "suppress, neutralize or divert instincts which, if acted upon, would violate moral rules of society" [33]. Erik Erikson built upon Freud's theories. He correlated problems with morality - personal and social deviations in behaviors - with the incomplete resolution of ego conflicts at some stage of childhood development [34]. Erikson believed that children develop through a series of psychological stages related to their physical maturation [35].

Social learning theory

Advocates of the social learning theory take a behaviorist approach. Values are learned through the direct positive and negative reinforcement of behavior [36,37]. Child rearing practices have a direct bearing on value formation. Generation of guilt, resistance to temptation, positive reinforcement and empathy, punishment, observation of models and imitation are all important processes in value formation. B.F. Skinner's "technology of behavior" is closely allied to social learning theory. "Behavior depends upon control exerted by the social environment." [38]

Cognitive and moral development

Jean Piaget is the father of cognitive and moral development theory. In *The Moral Judgment of the Child*, Piaget recognizes that there is a parallel between moral and intellectual development, between ethical and logical thought [39]. His theories outline a model in which logic gives structure to the thinking of early years, which enables morality to emerge [40]. Eventually the child develops intellectual and moral autonomy. Intellectual autonomy is the development of inner consistency and control of thought. Moral autonomy replaces the norms of authority with those of a reciprocal and sympathetic relationship with other people [41].

In his research into moral development, Piaget studied the nature of rules used in the game of marbles by children in Geneva and Neuchatel, Switzerland [42]. The child begins in a state of moral realism - the feeling that morality is a subsistent ruling force in itself independent of the child's thinking [43]. Piaget terms this the stage of moral heteronomy. Ultimately the child reaches a stage of moral autonomy where a sense of right or wrong is arrived at through mutual cooperation with others.

Piaget's Model of Moral Development

1) Motor and individual stage (birth - 2 years) : Child acts according to own desires and motor habits. No real rules used.

2) Egocentric stage (2 - 6 years) : Child uses accepted rules and imitates them but does not respect them or apply them in interaction with others.

3) Stage of incipient cooperation (7 - 11 years) : Rules are adhered to due to unilateral respect for the source of the rules - older children and adults. Child also recognizes adherence to rules as necessary to winning.

4) Stage of mutual cooperation (12 years and beyond) : Rules are decided upon by mutual agreement with others and respected as such. Autonomy is achieved from parents and other sources of moral authority. [44]

The two extremes of this model are embodied in the motivational forces of constraint in the early years and cooperation during adulthood. Under constraint children obey an external authority's set of moral rules (heteronomy). When moral maturity or autonomy is reached, a sense of justice forms and cooperation prevails. Social interaction is characterized by generosity and self-sacrifice [45]. According to Piaget, "the rule of justice is a

sort of immanent condition of social relationships or a law governing their equilibrium. And as the solidarity between children grows, we shall find the notion of justice gradually emerging in almost complete autonomy" [46].

Lawrence Kohlberg has more recently expanded upon Piagetian theory of moral development [47]. The Kohlbergian model of moral development recognizes three levels of moral reasoning : preconventional, conventional and post-conventional. Each level in turn contains two stages of moral development or a total of six stages.

Kohlberg's Model of Moral Development

Preconventional level :

Stage 1 : Orientation toward punishment and unquestioning deference to superior power. The physical consequences of action regardless of their human meaning or value determine its goodness or badness.

Stage 2 : Right action consists of that which instrumentally satisfies one's own needs and occasionally the needs of others. Human relations are viewed in terms like those of the marketplace. Elements of fairness, of reciprocity and equal sharing are present, but they are always interpreted in a physical, pragmatic way. Reciprocity is a matter of "you scratch my back, and I'll scratch yours" not of loyalty, gratitude or justice.

Conventional level :

Stage 3 : Good-boy - good-girl orientation. Good behavior is that which pleases or helps others and is approved by them. There is much conformity to stereotypical images of what is majority or "natural" behavior. Behavior is often judged by intention - "he means well" becomes important for the first time, and is overused. One seeks approval by being "nice".

Stage 4 : Orientation toward authority, fixed rules and the maintenance of the social order. Right behavior consists of doing one's duty, showing respect for authority and maintaining the given social order for its own sake. One earns respect by performing dutifully.

Postconventional level :

Stage 5 : A social-contract orientation, generally with legalistic and utilitarian overtones. Right action tends to be defined in terms of general rights and in terms of standards which have been critically examined and agreed upon by the whole society. There is a clear awareness of the relativism of personal values and opinions and a corresponding emphasis upon procedural rules for reaching consensus. Aside from what is constitutionally and democratically agreed upon, right or wrong is a matter of personal "values" and "opinion". The result is an emphasis upon the "legal point of view", but with an emphasis upon the possibility of **changing law** in terms of rational considerations of social utility, rather than freezing it in the terms of Stage 4 "law and order". Outside the legal realm, free agreement and contract are the binding elements of obligation.

Stage 6 : Orientation toward the decisions of conscience and toward self chosen **ethical principles** appealing to logical comprehensiveness, universality and consistency. These principles are abstract and ethical (the Golden Rule, the categorical imperative) ; they are not concrete moral rules like the Ten Commandments. Instead, they are universal principles of **justice**, of the **reciprocity** and **equality** of human rights, and of respect for the dignity of human beings as **individual persons.** [48]

Each of the six stages has its respective motives for compliance with moral rules :

1) obeying rules to avoid punishment ;
2) conforming to obtain rewards, have favors returned ;
3) conforming to avoid disapproval, dislike by others ;
4) conforming to avoid censure by legitimate authorities and resultant guilt ;
5) conforming to maintain the respect of the impartial spectator judging in terms of community welfare ;
6) conforming to avoid self-condemnation [49].

How would a person's justification for a particular stand taken on a real-life environmental issue be explained at the various stages of moral development ? Here are some rationales that Miles proposes that different people operating at all six stages of moral reasoning might use to justify their views, for instance, on whether or not Russell Train, a past administrator of the United States Environmental Protection Agency, should or should not approve the use of DDT :

Mr. Train should approve the use of DDT

1) Everyone should accept decisions made by the administrator of the EPA.

2) I don't want jobs to be lost because the economy will be affected, and even if I don't lose my job, the cost of wood products is bound to go up, and my cost of living will rise.

3) Business and industry support the use of DDT and Mr. Train will be very unpopular with these groups if he does not allow the pest control program to begin.

4) It is Mr. Train's duty to do what he can to preserve the economy even as he maintains the environment.

5) The government has a moral responsibility to provide for the welfare of the nation's people. It must protect their means of making a living. In this case, the resource base of the tourism and forest products industries must be protected and sustained.

6) He must allow the use of the pesticide because in this case the benefits outweigh the costs.

Mr. Train should not approve the use of DDT

1) Everyone should accept the decisions made by the administrator of the EPA.

2) The DDT will probably affect the reproduction of falcons, and there won't be any when I go there to see them.

3) Mr. Train will be very unpopular with environmentalists if he approves the use of DDT.

4) It is Mr. Train's duty to protect the environment, acting on the basis of the best information available.

5) The government has a moral responsibility to maintain a quality environment. This responsibility extends to prohibition of the use of substances which have demonstrated negative effects on that quality.

6) As a matter of conscience the permission to spray must be withheld, despite political pressure and public opinion. As a public servant, Mr. Train must follow the path which he believes is right, irrespective of any external pressures [50].

The use of these various levels of moral reasoning, when making decisions of moral principle, follows a certain chronological sequence : stages 1 and 2 decrease steadily with age ; 3 and 4 increase until age 13 and then become stable ; 5 and 6 increase from age 13-16 and beyond.

There are several characteristics of progression through these various stages that Kohlberg sees as being universal [51]. Fifty percent of most peoples' thinking will be at a single stage, regardless of the issue involved. Each stage must follow in order and in turn ; moral development moves essentially in a forward direction. However, transition from one stage to the next may not always be completed, and a person may sometimes seem to regress into an earlier stage. Each stage is a more complex, hierarchical integration of the preceding stage [52]. Progression from one stage to the next is an active process in which the child's interaction with people, who are functioning higher on the moral development hierarchy, will promote moral development [53].

There is, however, a male bias in Kohlberg's rule-oriented theories. Moral standards are based on male orientations of morality, and female behavior has been seen as a deviation from that norm [54]. Piaget concluded that boys oriented more toward rules in their games, while girls were more concerned with relationship. Numerous studies on male and female sex roles and stereotypes show that males favor "the separateness of the individual self over connection to others and leaning more toward an autonomous life of work than toward the interdependence of love and care" [55]. Women's orientation toward care and concern for others scores them low on Kohlberg's scale - stage 3 at the conventional level.

In one study, designed to compare male and female responses to moral problems, 11-year old children were presented with this dilemma :

> A man named Heinz needs a drug to save his ailing wife's life. Heinz is poor and the druggist refuses to sell the drug at a reduced price which Heinz can afford. Should Heinz steal the drug ? [56]

Jake said yes, he should steal the drug - because life is worth more than money, because laws can be mistaken, and because the judge would probably see it that way. Amy replied no, there must be alternatives : they could try to borrow the money ; maybe the druggist could be further reasoned with ; and besides, Heinz's wife will still need him if he is caught and sent to jail. As the researcher, Carol Gilligan, concludes, "Both children thus recognize the need for agreement, but see it as mediated in different ways - he impersonally through systems of logic and law, she personally through communication in relationship."

Carol Gilligan's observations indicate that because male ego development manifests an identity away from mother, firm ego boundaries are encouraged [57]. Male morality tends toward separation, autonomy, individuation and natural rights. Females are like their mothers, and so development, in an ideal sense, fuses love and identity. Women, therefore, grow to see themselves not as being separate from the world, but in relationship with it.

As Gilligan states :

> In the different voice of women lies the truth of an ethic of care, the tie between relationship and responsibility, and the origin of aggression in the failure of connection. Women's development delineates the path not only to a less violent life, but to a maturity realized through interdependence and taking care. [58]

In women's development there is a fusion of justice and love.

There are parallels between the female interpretation of morality and relationship, and the kind of concepts and conduct that environmental educators try to teach : a sense of being a part of the environment, wholism and interdependence.

How can the views of Piaget, Kohlberg and Gilligan be reconciled ? In one sense they are, perhaps, not meant to be. People cannot escape the paradox of being at once part of their environment and the lives of those around them, and yet conscious of their separate-

ness. Claire, a 27-year old woman in Gilligan's studies, described morality as "the constant tension between being part of something larger and a self-contained entity" [59]. This male-female duality arises repeatedly in philosophy and religion, as in Christianity : Christ as the living God, preacher and exemplar of moral goodness and righteousness ; and the Blessed Mother as the perfection of love and caring, kindness, compassion and faith [60].

In reaching for an integrative philosophy on which to build an environmental values education program, there are elements of both truths that can be drawn upon. The perspective called for is one of accepting differences that need not be scaled from better to worse. Corresponding with Piaget's model of moral development (page 10) through to the beginning of the stage of mutual cooperation, are Kohlberg's first three stages of cognitive moral development (page 11) [61]. The end of this period is a time in a child's moral development when males tend to shift toward an orientation that Kohlberg describes in his stages 4, 5 and 6.

It is important, then, in moral education, to be conscious of this development and to foster a sense of morality, of justice and of the existence of objective 'rights' and 'wrongs', of better and less desirable modes of conduct. In striving to nurture integrated people, the equally important aspects of being in relationships, of living in a loving and compassionate way with the earth and other people, must also be a vital part of moral education. This will be the first premise on which this integrative EVE strategy will be based (chapter 3).

The second crucial component is Piaget's premise of a transition from moral dependency or heteronomy, to the development of what he calls moral autonomy ; when a person develops her or his own moral orientation. Whether at the point of autonomy a child is orienting more toward Kohlberg's stages 4, 5 and 6, or more toward a moral bent through relationship with others, this period of transition is important. Chapter 3 discusses which values education strategies are more appropriate during the stages of moral dependency and autonomy.

THE DYNAMICS OF VALUES AND BEHAVIOR : VALUE AND BEHAVIORAL CHANGE THEORIES

There are few subjects that have been studied as extensively as that of the dynamism of human values and behavior. So far in this chapter the elements that comprise values have been discussed, as well as the relationship between values and actions. A brief review has been made of the ways that individuals form their values, with emphasis on moral development theories, and the central themes of love and justice. This last section looks at the forces that mold our values throughout life. Most importantly, there is a summary of Abraham Maslow's Self-Actualization theory, which explains the natural human orientation to seek growth in values, and to strive for a sense of self-worth and fulfilment.

Motives for change in values and behavior

Peoples' self-concepts are central to the things that they believe in and value, and to how they behave. It seems self-evident that we would act according to how we perceive ourselves. In fact, there have been numerous studies that have confirmed this assumption [62,63,64].

The theories of cognitive dissonance [65], cognitive consistency [66] and congruity [67] all center around the theme that people behave to minimize internal inconsistency among interpersonal relations, personal knowledge and beliefs, feelings and actions [68]. Persistent personal inconsistencies cause psychological discomfort and this can be a motive to change. Rokeach states that changes in attitudes, values and behavior will best occur if the exposure to information implicates self-concept and induces self-dissatisfaction, which can have long-term effects in shifting values [69]. Information will be most effective in eliciting favorable reactions and creating a desire to change when a person can relate to it [70,71], when it enhances self-concept and personal growth [72] and when it occurs unexpectedly [73].

Throughout these changes a number of psychological events are occurring. Kelman has identified some of the underlying psychological processes that accompany attitude change [74]. **Compliance** occurs when someone accepts the ideas of another because of respect for authority or acknowledgment of the truth in a persuasive communication. **Identification** with other values or behaviors is stimulated by a desire to conform with a certain person or persons. When we are exposed to a value or behavior and it becomes assimilated into our own value system or repertoire of activity, Feldman tells us that we are experiencing **internalization** [75].

Some additional forces that can affect values and behavior are :

- persuasive communication [76,77] ;
- positive and negative reinforcement - reward and punishment [78] ;
- emotional states - affected by external situations and internal feelings, which are more powerful [79,80] ;
- degree of social support [81-84] - behavioral change that is supported by family and peers will be more willingly and effectively made [85] ;
- ego-defensiveness - we develop attitudes that help to blind us to our own personal weaknesses [86] ;
- degree of knowledge - we adopt generalized attitudes about life to fill in our gaps in knowledge [87] ;
- rationalizing or redefining the object of attitude itself [88] - feeling for instance, on having a car stolen, that "it was getting to be time to buy a new one anyway" ;
- our degree of committment - a predisposition to maintain a commitment increases as we move from private commitment to public announcement, to active participation and external commitment of another person on our behalf [89].

Resistance to change can be caused by a number of factors [90,91] :

- pain or loss could be suffered through the change ;
- fear of changing ;
- lack of knowledge of how else to be ;
- the satisfaction of the present behavior could overpower the discomfort felt through dissonance ;
- a person's public image may be damaged ;
- aggression towards the change agents ;
- a high level of self-esteem may help a person to resist change ;
- previous exposure that threatens a belief will bolster defenses for that belief [92].

IN SEARCH OF UNIVERSAL HUMAN VALUES

Abraham Maslow identifies the human bent toward a preference for "growth-values" and behaviors - those that help us to become the best that we are capable of becoming [93]. We tend toward self-actualization, making full use of our talents, potentials and capabilities [94]. Each person is moved toward a wholeness of self, an integrated personality and a strong identity, toward truth versus blindness, and toward such positive values as creativity, goodness, serenity, courage, knowledge, honesty, unselfishness and love [95]. Maslow holds that among self-actualized people the boundaries fade between work and play, between selfishness and selflessness [96]. Dorothy Lee observes that these qualities are found in many societies : what we do to ourselves and to others is not exclusive to one or the other, since we are all part of the whole [97].

Why are we pulled toward choices of growth, fulfillment and psychological health ? According to Maslow, the consequences of making growth choices are ascendant relative to other possibilities. Growth choices can bring physical and psychological health, longevity, beauty, sexual prowess and attraction - in short, those pleasures of being a fulfilled person [98]. Choosing positive values and behaviors helps us to survive and will direct us toward "goodness" as people. Even healthy infants tend to choose growth over regression.

There are many realities that prevent people from becoming self-actualized. Basic physiological needs must first be met before someone is capable of being concerned and active in fostering a better self and a better world. This is a crucial point since it is infinitely more difficult for many people in the world, who are struggling to fulfil their survival needs, to be concerned with working for positive social and environmental goals. Maslow ranks these needs hierarchically, in order from those of most vital necessity :

- **pyshiological needs** : food, water, clothing, shelter ;
- **safety needs** : for children, a loving, predictable, supportive environment. Adults from safety-deprived environments behave as if they were afraid of disapproval and abandonment ;
- **love needs** : hunger for affection through friends, spouse, children - there is a reciprocal need to give and receive ;
- **esteem needs** : desire for strength, achievement, adequacy, confidence, as well as reputation, prestige, recognition, importance, appreciation ;
- **self-actualization needs** : doing what we are fitted for - desire for self-fulfillment - becoming everything that we are capable of becoming. [99]

Preconditions for fulfilling these needs include the existence of such freedoms as those of speech, action (showing concern for the health and safety of others), of expression, to learn, to defend oneself, and such conditions as fairness and equality. In *Pedagogy of the Oppressed*, Paulo Freire recognizes the necessity of freedom as a precondition of human development. Freedom, says Freire, is "the indispensable condition for the quest for human completion" [100].

Like all progressions of this nature, the hierarchy is not as infallible as it appears. Some people may emphasize self-esteem and achievement over love, psychological disturbances may distort needs priorities or the more basic needs may not yet be fully met. A crucial consideration is that of people having high ideals or high values, in a secular or religious sense, who may center their lives almost completely around fulfilling the needs of others [101]. Spiritual and religious forces in peoples' lives, as determiners of social and environmental values, though beyond the scope of this book, need to be given serious consideration. There is a strong need for environmental values to be addressed by theologians and included in religious teaching [102,103]. As Richard Baer puts it, "Until we recognize that man's spirit itself is the ultimate frontline of the environmental crisis, we will continue to nibble away at the edges." [104]

The needs that Maslow lists tend to be universal among cultures [105]. They can be considered a natural basis for identification of the cross-cultural values that people stress in order to meet their most basic requirements of life. Lynn White reminds us that all people "face the same inevitable problems, whatever their cultures. They must get food and shelter, and learn to cope with birth, illness, love and death." [106]

Maslow's ideas are crucial in considering values education, and education in general. Says he, "It's the task of education, therapy, marriage and the family to ally themselves to being conducive to individual growth." [107] He points out that it is people who have been loved, nurtured and helped toward a healthy, growing pattern in childhood who will remain a positive force throughout life [108]. For all of these reasons, a loving, caring teacher is a good moral educator.

SYNTHESIS

Values are complex entities through which people show preferences for certain ways of living and conditions of existence. People may hold thousands of beliefs which combine to form attitude orientations toward responding to an object or set of circumstances in a certain way, and attitudes are the building-blocks of values. Self-concept and self-esteem are intimately tied to human values and people seek to maintain consistency between their values and behavior, and their own perceptions of their true identity.

The modern realities of overpopulation, overconsumption, high technology and resulting resource scarcities and environmental alteration have made it more difficult to chart an idealistic moral course. With growing awareness of humankind's intimate relationship with, and reliance upon, our environment for survival, individuals are realizing that an assault on the environment is often a violation of another person's or country's health and well-being. Even more profound is the notion that the components of the environment possess value in themselves, apart from their utility to humankind.

In ethics, as in other moral matters, the non-human elements of the world are being considered increasingly more important. Hourani reminds us that "Our modern Western concept of justice does not at the present time give equal consideration to animals and less articulate forms of life as to men." [5] This raises the further question, should non-living components of the environment have possession of equal rights under our system of ethical judgment ?

> Obligations have no meanings without conscience, and the problem we face is the extension of the social conscience from people to land. [6]
>
> A thing is right when it tends to preserve the integrity, stability and beauty of the biotic community. It is wrong when it tends to do otherwise. [7]
>
> Aldo Starker Leopold
> *A Sand County Almanac*

Leopold took the important step of applying the ethic of social conscience to the earth itself, with all of its living and non-living parts. A definition of what is right, however, of what it means to live in a loving, just relationship with our surroundings, must include people as well. The integration of social and environmental conscience is seminal to the development of a life ethic, favoring the harmonious improvement of human well-being and of the quality of the environment.

A theoretical grounding for objective values

Defining morally positive values and behavior is further complicated by the common viewpoint that denies the existence of objective values. The following proposition, put forth in support of values objectivity, states that values are objective, that they are real entities in themselves. Beauty may exist in the eyes of the beholder, but moral value does not. For instance, there is a crucial difference between two people expressing their feelings about the shade of green among the leaves that blanket a wooded hillside (aesthetic value) and a disagreement over whether those trees should be felled for use as firewood (moral value). The second case considers moral value because it involves our conduct toward the earth.

There is a confusion between moral and nonmoral values which further clouds the issue of objectivity versus subjectivity of moral values. Clarence Lewis demonstrates how this confusion arises through one subjectivist's view that value "is ineffable...it is a simple quality, like the redness of a rose, and being unanalyzable, is indefinable" [8]. This may be true of a rose's color as a value (although even this is debatable) but the color red is not a moral value. The nonmoral value inherent in a rose's shade of red does not equate with the moral statement that says that Apartheid is wrong. It is this confusion that has led many to conclude that moral values cannot be approached objectively.

Moral values are the guiding force behind our conduct toward the earth and other people, and, as such, are distinct from other kinds of value which are nonmoral.

> Values are no less facts than scientifically accepted facts that are based on observation and conclusions drawn. We live our lives observing, practising, experiencing values and certain ones are decided on as the proper ones through years of experience. [9]
>
> Theodore T. Lafferty, 1976

An individual's socialization has a strong influence on how his or her values form, being derived from experiences in home, school, religion and government. Some main determiners of value formation are a person's psychological development and the system of punishments and rewards that he or she grew up in. Certain values tend to be regarded more highly among various sectors of a society : the sexes, socioeconomic classes and age groups. As people grow in their capacity for complex, abstract thought, their morality also develops from being dependent on authority figures for moral direction, to autonomy, having a moral mind of their own. Males tend to orient more toward external moral rules, particularly the concept of justice, while women tend more toward a morality of love, compassion and caring in relationship with others. The search to help people grow into a morality that fuses love and justice, toward other people and the environment, is a basic tenet of environmental values education.

Values are dynamic throughout life. Social support is a crucial determiner of a person's commitment to values and modes of conduct. Psychologically healthy people naturally orient toward positive growth values and behaviors. Depending upon whether their most basic needs are met, people will move up the hierarchy of growth values, from physiological to safety needs - then seeking love, esteem and self-actualization. People tend toward self-actualization, making full use of their own talents, potentials and capabilities.

An important premise of this wholistic strategy of EVE is that the personal growth in value orientations, toward self-actualized, fulfilled, whole, healed individuals, is primary to creating people who are interested in pursuing positive social and environmental values and behaviors. Environmental educators need to foster fulfilled individuals who have, as a basic moral orientation in life, a strong, caring and loving relationship with Earth, united with the ideal of justice.

CHAPTER 2

A REVIEW OF ENVIRONMENTAL VALUES EDUCATION STRATEGIES

What is the state of environmental values education at the present time ? Research and practice in this field are at a youthful, exploratory stage. Much research to date concentrates on the preliminary studies necessary for evaluating the various EVE strategies that are already in use. The literature search revealed a need for comprehensive study into the theories and methods of EVE. This chapter combines the major ideas expressed in the literature with some fresh thinking on this topic.

Before the discussion begins it is necessary to clarify the meaning of some words and phrases that are used frequently throughout the following analysis. **Values education** and **moral education** will be used interchangeably. These terms refer to the teaching of general moral values and an ethical system with which to apply these values. A valuing **strategy** refers to a specific overall plan for values education ; for instance a decision to use values inculcation to impart values to younger learners. Values education **methodology** will denote an approach to teaching values within a chosen strategy. In other words the strategy of values inculcation can involve either methodologies or moralizing or modeling. Methodologies can also be shared between strategies. For instance moral dilemmas can be used with values clarification, moral development and values analysis. Finally, a valuing **exercise** should be one part of an overall, sequentially-planned EVE strategy. A valuing exercise may involve the study and discussion of a major, positive figure in history, such as Martin Luther King, Mahatma Ghandi, Simon Bolivar, Jeanne d'Arc, as a means of presenting a role model to the learners.

ENVIRONMENTAL VALUES EDUCATION STRATEGIES

Strategies for moral education are widely divergent in their aims and methods. The literature search revealed eight major strategies used in moral education :

- laissez faire ;
- moral development ;
- inculcation ;
- values analysis ;
- values clarification ;
- action learning (service learning) ;
- confluent education ;
- behavior modification [1,2].

Although the valuing strategies are discussed individually, it should be emphasized that they can be used concurrently where appropriate. Too often, each of these strategies has been viewed as a separate entity. By combining strategies carefully, their strengths can be made to complement one another. An example would be for the teacher to model ecologically positive behavior, such as bicycling to school to save energy. A values analysis exercise could be designed during which the learners would look at the trade-offs of saving fossil

fuels by not driving a car, versus the personal sacrifice of the greater inconvenience and time involved when commuting by bicycle.

The discussion describes and evaluates each of the valuing strategies for both general values education and EVE. The description of each strategy is divided into two sections. The first section includes an overall description of the strategy followed by analysis of its present status in general values education. The second section focuses specifically on the present status in EVE of the strategy being discussed.

GENERAL DISCUSSION OF VALUING STRATEGIES

Laissez faire

There are many teachers and administrators who claim to follow the laissez faire strategy. Laissez faire is not a moral education strategy, it is a strictly "hands off" policy that is supposed to maintain objectivity.

In fact, valuing is an unavoidable, implicit part of all forms of interaction between the teacher and learner. Although "there is usually an absence of formal programs in values education and/or environmental education...there is always a hidden curriculum that passes on values and environmental messages" [3]. "Values are taught...whether the school consciously plans for teaching them or not." [4] "Consciously or unconsciously, teachers impart norms of the individual's role in society." [5] Values are implicitly taught through :

- the teacher's manner of relating to students ;
- the methods of classroom control ;
- selection of course materials ;
- choice of students during a discussion ;
- emphasis on creation of knowledge vs. transmission ;
- provision or lack of student supportive services ;
- the hierarchical structure of educational institutions ;
- choice of methods and orientations concerned with development of personality and character ;
- the teacher's example as a role model [6,7].

The laissez faire approach in EVE is often linked with a faith that increased knowledge alone about the environment will eventually surface as a strong set of environmental values. The value theory of Rokeach, which has been supported by empirical research, has shown that there is a complex, hierarchical relationship between beliefs, attitudes, values and behavior [8].

Knowledge is only one of the crucial components of environmental attitudes and behavior. Dispoto found that up to forty percent of individuals' environmental activity could be explained in terms of how much they knew [9]. A causal relationship between increased environmental knowledge and a moderation of environmental attitudes was reported by Ramsey [10]. His study indicated that two crucial factors in the attitude change process are the necessity for a long-term effort in changing attitudes and values, and the type of education and attitude involvement employed.

Increased knowledge alone, however, is not enough to be most effective in affecting values and behavior. Pettus explains that "The approach of traditional textbooks and various conservation topics in conservation education may have been relatively inefficient in developing positive conservation attitudes...instead of altering facts the teacher should concentrate on altering basic value-attitudes associated with conservation." [11]. Other "research shows little correlation between cognitive achievement and concern and values. Able students who achieve well in traditional 'content-centered courses' do not necessarily demonstrate commitment to positive social goals" [12].

Studies generally confirmed that changes in environmental attitudes and behavior are most effectively brought about by EVE strategies that increase the learner's level of

knowledge, amount of emotional involvement and experience in the area being addressed [13,14]. James Swan found that merely increasing visual awareness of air pollution did not result in a significant increase in concern [15]. However, Swan hypothesized that environmental concern and environmental action may be predicted by assessing not only peoples' levels of awareness of air pollution, but their personal priorities and sense of power and control in their lives as well. In order to be most effective in fostering sound environmental values and behavior, EVE strategies must involve all aspects of the learner - intellect, emotions, experiences - all factors that affect an individual's predisposition to environmental concern and action.

Moral development

Recently published ideas in moral development, such as Carol Gilligan reveals in her book *In a Different Voice*, have not yet been developed into practical exercises. Moral development, as based on Piaget's and Kohlberg's theories, has begun to be used in moral education. Their theory states that the moral growth of an individual occurs in progressive stages [16]. Learners are to be aided in this process by being exposed to moral conflict situations, and to other individuals who are functioning at a higher level of moral reasoning [17]. Moral dilemmas are introduced that require the use of moral reasoning lying just beyond the learners' present levels of functioning. These dilemmas create internal dissatisfaction that stimulates moral growth. The highest level of moral reasoning is based on the universal ethical principle of justice. Kohlberg's theory has been supported by empirical research. Kohlberg outlines several responsibilities that are important for each teacher to fulfill if he or she is to provide effective moral education :

- knowing the child's stage of functioning in moral reasoning ;
- exposing the child to a stage one step above the child's own thoughts ;
- exposing the child to problematic situations that pose genuine moral conflict and disagreement ;
- creating an atmosphere of interchange and moral dialogue in which conflicting moral views are compared in an open manner [18].

The presentation of a moral dilemma is often used in moral development. An effective moral dilemma should :

- build upon work in the course ;
- be as simple as possible, having a central character or primary group of characters ;
- be open-ended ;
- involve two or more issues that have moral implications ;
- offer a choice of actions and pose the question, "What should we do ?" [19]

Butterfield proposes a six-step process to conducting moral dilemmas :

1) identify what the dilemma is about ;
2) identify alternative courses of action ;
3) predict consequences of each course of action ;
4) find evidence of the likelihood of those consequences occurring ;
5) determine the desirability of the consequences;
6) decide the most appropriate course of action, bringing about the greatest good realizable in the case at hand [20].

Role-playing can also be effective in that it involves social interaction and active sharing of values.

The general premise of moral development, which defines the periods of moral dependency and autonomy, could be an underlying strategy for moral education. Recognizing the child's stage of moral reasoning is important. Younger children, roughly up to the age of 11-12 (again, there is a gray area of transition), are still forming their general moral character, while older children tend to have a more independent moral orientation.

Moral education should not, however, consist of only teaching a set of values. Of equal importance is the way of living that it should teach, of relating to other people and the environment with concern, caring and compassion. As Piaget himself once wrote :

> How immoral it can be to believe too much in morality, and how much more precious a little humanity than all the rules in the world. [21]

Some problems with the moral development strategy are that :

- in its present form, it is dependent upon research conducted with male subjects, and so contains a male bias [22] ;
- there is a need for more research to be done in different cultures, and within the various social and economic groups within societies to prove that it is cross-culturally valid ;
- although Kohlberg opposes the inculcation of traditional values [23], moral dilemma and moral reasoning exercises are useless without a firm grounding in these values [24] ;
- there is a need for more practical resources, such as books and workshops, for helping teachers to bring moral development into the classroom.

The strategy of moral development, combining love and justice, is perhaps one of the most neglected and most promising of values education strategies that can be applied to EVE. Although little evidence of the systematic use of this strategy in EVE could be found, there were several articles that advocated the use of Kohlberg's moral development typology in creating EVE exercises [25,26,27,28]. One empirical study found that the learners' levels of cognitive development and moral reasoning were positively related to emotions, knowledge and activity concerning the environment [29]. Knapp and Goodman have designed an environmental education program that puts heavy emphasis on both concern for the environment and other people [30].

Inculcation

The purpose of inculcating values is to instill in learners certain chosen values, or to shift learner values towards those desired ends [31]. One place where inculcation is used effectively is in religious instruction. Values inculcation exercises center on a few key methodologies : moralizing, modeling, positive and negative reinforcement and role-playing. Moralizing consists of simply telling a learner what is right or wrong. This can be done implicitly, through laying down the rules of behavior, or explicitly, by directly communicating value judgments to the learners. Modeling has profound effects on learner behavior since morally heteronomous learners follow the lead of respected, moral authorities. In modeling, the teacher presents values by setting a personal example for the learners and by having students study other role models in literature, history or current events. Positive and negative reinforcement refer to the system of rewards and punishments used in conduct. When teaching values through role-playing, learners must adopt and defend a specific point of view. "Role-playing has an amazing way of spotlighting human interaction and of bringing out the values implicit in human behavior so that they may be the subject of concrete inquiry and analysis." [32]

The teacher's part as a role-model is an especially important form of values education that occurs constantly. "The child develops love and justice only by being loved and treated justly." [33] Even "educators who consider an individual to be a free, self-fulfilling participant in society tend to inculcate values as well, especially values such as freedom to learn, human dignity, justice and self-exploration" [34]. Few teachers would fail to reprimand a learner for a racial slur, and these attitudes should carry over into the teacher's own behavior. To do otherwise would be to preach equality and justice, but to condone hypocrisy.

Inculcation is used by those who feel strongly that "the school should promote opportunities and experiences for the learner to develop ethical and aesthetic values and an understanding of moral principles as a basis for a philosophy of life in accordance with which he may make value judgments" [35]. Educational authorities in several countries have decided upon the selective use of values inculcation with specific issues, instead of values

clarification. This choice relies on the feeling that in certain cases, such as that of law and order, the young learner needs to be taught a particular value. There are a number of rationales used to justify values inculcation as a legitimate valuing strategy :

- Inculcation occurs implicitly whether or not it is a planned form of values education.
- There are certain value standards in society, culture and religion [36].
- Certain basic values must be instilled in individuals if continuity of culture is to be ensured.
- Young people who are not yet morally autonomous individuals (up to about 11-12 years) must be taught the ideal values of society in order to begin forming an ethical system on which to base value judgments upon reaching moral autonomy.

It should be noted that many educators and other members of the community object to values inculcation. One major reason is the common belief that values are too subjective to be taught. Many parents feel that values should be taught in the home and through religious practice, not in the classroom. There is also a widespread fear that schools will indoctrinate their own set of values, or those held by a particular teacher.

Inculcation occurs in EE as it does in all education, primarily through the unavoidable methods of moralizing and modeling. Knapp points out that inculcation is implicit in the rules of ecology camps, in the positive and negative reinforcement of behavior during camp and even in the way camp meals are conducted [37]. In his research on internal versus external modes of personal behavioral control, Peyton concluded that a "warm, supportive, nurturing environment encourages internality" [38]. Peyton feels that an internal means of personal control is superior to developing externality. He then states some of the factors that reinforce what he calls a strong internal locus of control, and which are really forms of inculcation, such as a supportive family environment and consistency of parental reinforcement.

Some researchers advocate the use of modeling in environmental education. In one study it was found that the example set by camp counselors, regarding their levels of interest in camp environmental studies, was a major influence on changing campers' values [39]. Costa believes that teachers should demonstrate, both with speech and actions, principles that will reinforce the lesson : "Demonstrating a certain value in a real situation, or even a contrived one, will be more effective than merely describing it to the learner. Their feelings, emotions and senses should be piqued so that they may **feel** what is being taught." [40]

Values analysis

Values analysis applies the scientific, logical thinking of deductive reasoning to the study of values. Its main objective is to help learners apply this form of investigation to values exploration and decision-making in their own lives. Through the experience of a values analysis exercise learners should become more competent at integrating and conceptualizing their values.

There are two commonly-used methodologies in values analysis. One involves the presentation of an incident or moral dilemma that evokes a value question. A role-playing exercise may also be used. The role of the teacher is to involve the learners' values in the values analysis exercise and to function as a non-evaluative, supportive and active listener for the underlying meaning of learner discourse [41]. A well-conducted exercise encourages learners to gain insight into values and to establish an empathetic relationship with others in a situation where there is a value conflict.

Values analysis exercises consist of 6 basic steps :

- identifying and clarifying the value question by defining terms and providing examples ;
- assembling (gathering and organizing) facts relevant to the value question ;
- assessing the truth of these facts ;
- clarifying the relevance of the facts to the value question ;

- arriving at a tentative value decision ;
- determining whether or not the decision is acceptable [42].

There are a number of strengths and weaknesses involved with the heavy concentration on cognitive experience in values analysis. Values are not scientific facts and it is questionable whether or not, in striving to make value decisions, we actually use the deductive method of investigation, analysis, and decision-making. Conversely, learners may obtain a better realization of what their own values are and be better able to openly share these with others in an empathetic way. The practice that could be gained in applying this objective analysis and decision will also be helpful in societies where there is a heavy emphasis upon objectivity.

Values analysis is an often-recognized and widely-accepted strategy for EVE. Miles describes the Banks Value Inquiry Model, a step-by-step analytical approach during which participants identify and define conflicts and related behaviors, deduce values behind behaviors and ascertain any conflicts. The learner studies sources of the values held and then states his or her own preference [43]. The values analysis strategy is recognized as a rational, objective approach with a strong cognitive grounding. Advocates of this method, who are often attracted to its claim of objectivity in teaching values, frequently reject any form of inculcation [44].

Values clarification

Except for the laissez-faire strategy and the inevitable valuing acts of moralizing and modeling, values clarification is the most widely used valuing strategy in both general and environmental values education. Curriculum materials for values clarification are readily available and can be easily assimilated into classroom activities. Values clarification methodologies include role-playing, games and simulations of real-life situations, in-depth self analysis exercises, out-of-class activities and small group discussion. There have also been numerous teacher training workshops on the use of values clarification exercises.

Like values analysis, values clarification emphasizes the process of valuing, not the values themselves. This process consists of three steps - choosing, prizing and acting :

Choosing :
1) freely ;
2) from alternatives ;
3) after thoughtful consideration of the consequences of each alternative.

Prizing :
4) cherishing, being happy with the choice ;
5) being willing to affirm the choice publicly.

Acting :
6) doing something with the choices ;
7) repeating the choice in some pattern of life [45].

Judgment is to be avoided. In the course of a discussion the teacher should not make substantive statements, should only ask questions and hold judgment until the end [46]. "The purpose of the discussion should not be to arrive at a single answer to a problem. The teacher should work to keep the issues open rather than to seek consensus." [47] "Thus the values clarification approach does not aim to instill any particular set of values - rather the goal of this approach is to help students utilize the seven processes of valuing in their own lives ; to apply these valuing processes to already formed beliefs and behavior patterns and to those still emerging." [48] By increasing learner self-awareness, values clarification exercises can often expose a learner to incongruity between preferred attitudes and actual behavior. Values clarification can :

- help learners to become aware of and identify their own values and those of others ;
- help learners to communicate openly and honestly with others about their values ;
- help learners to use both rational thinking and emotional awareness to examine their personal feelings, values and behavior patterns [49].

Some important steps have been identified that will help to facilitate the values clarification exercises :

1) choose an appropriate topic ;
2) review literature on the topic ;
3) identify the values issues that are best illustrated by this topic ;
4) select an appropriate activity format ;
5) reduce the activity to clear directions for students and brief introductory statements of content ;
6) fit the activity to the time available ;
7) follow activity with a discussion [50].

As a result of its popularity, values clarification has been closely scrutinized. It can help people to know and respect themselves and to be able to make choices freely [51]. Empirical studies have shown that it improves a student's reading ability and has a positive effect on classroom behavior [52].

There have also been a number of criticisms concerning this approach in recent years [53,54,55]. It is likely that any valuing strategy that is used so frequently would also be found to pose some problems. Nevertheless, the criticisms of values clarification need to be recognized because this strategy is in such widespread usage. Another important factor is the attitude which exists among some advocates of the approach. Sidney Simon, a co-author of the first book on values clarification, has stated that "My dream is that every school in the country eventually will have groups of teachers trained as values clarification specialists." [56]

Following is a list of some of the major objections raised about the values clarification strategy that are relevant to this study :

- There is a confusion between the process of valuing and value itself. Emphasis is placed on the steps of deciding how to apply one's values without ever teaching what it is that constitutes values [57]. As William Bennett puts it, "Children are invited to a world where it is a travesty and an imposition for anyone to tell them the truth." [58]

- Thus values clarification ignores the moral evolution of humankind through 25 centuries of reflection on the values question... [59]. As Sidney Simon has said, "Traditional values have become meaningless platitudes or hypocritical meanderings." [60]

- The child's stages of moral development are ignored in the application of this approach. In *Values Clarification : A Handbook of Practical Strategies for Teachers and Students*, Sidney Simon and Leland Howe state that "almost all of these strategies can be applied to any age level, as long as the items are adapted to the specific group" [61]. Yet a few pages later these authors reveal an intuitive sense that learners can be too young for values clarification exercises to be effective : "Teachers who think their students are too inexperienced to have developed worth-while ideas should not use the values clarification approach. **Values imposition** (author's emphasis) would probably be more their style ; and they should be open about it and not hide behind the values clarification jargon and techniques." [62]

- Moral and non-moral values are not distinguished from one another in values clarification exercises [63]. In this way learners become confused as to whether values are matters of taste or objective entities in themselves.

- Values clarification is based on a weak theoretical structure [64]. Kohlberg and Piaget's strategy of moral development has an elaborate theoretical and empirical foundation.

These criticisms show that values clarification, like any valuing strategy, has specific strengths and weaknesses. Especially important to the present study are the last two objections that were listed. It is a vital concern that this strategy does not recognize

the progressive stages of moral reasoning found in children of different ages. Values clarification seems to be most appropriately used to help morally autonomous learners to become more aware of their already-formed values, and better able to make value decisions.

Values clarification is the most widely used strategy in EVE. Numerous workshops have been held and many books containing values clarification exercises for EVE have been developed. The past decade has seen a surge of interest in values clarification and many articles have been written in support of using this strategy in EVE [65,66,67,68,69,70,71].

Methodologies for values clarification in EVE are similar to those used in values education overall. One innovation is the combining of "environmental encounters", a form of action learning, with a follow-up activity that consists of values clarification exercises. Learners become actively involved in solving a real environmental problem in the community and the study of their own and other environmental and social values in the process [72]. The environmental encounter values clarification strategy provides a means for learners to become exposed to other viewpoints and to practise making decisions involving environmental values.

Action learning (Service learning)

Action learning applies the time-tried approach of experiential learning to values education [73]. This strategy is based on socio-psychological theories that go beyond thinking and feeling to action [74]. Action learning exercises encourage teachers to take learners out into the community to learn from real-life experiences. Some action learning activities are outdoor learning, cross-cultural exchanges, internships and community service programs [75].

Through first-hand experience learners gain skills and knowledge in group organization and interpersonal relations. Action learning experiences provide vital personal and social challenges. Growth in values is inevitable since action learning exercises involve a real-life encounter and as such provide an excellent values education. The action learning exercises are often followed by values analysis or values clarification. Stilwell outlines some basic steps that can be followed in planning and implementing school and community-based action learning exercises :

- school or community involvement ;
- needs assessment ;
- goal setting ;
- choosing specific objectives ;
- program planning and preparation ;
- implementation ;
- ongoing evaluation of the process and of the total experience at its completion [76].

Because the action learning approach involves learners directly, it has the advantage of allowing each learner to apply his or her own level of moral reasoning to the experience. A thorough, post-activity discussion is essential to creating explicit realizations from the implicit nature of moral involvement through the action learning experience. If other valuing strategies are applied at the proper level of moral reasoning, they could be used during and after an action learning experience : inculcation, moral development, values analysis, values clarification and confluent education could all be effective.

The use of action learning in EVE seems to be less a planned process and more a valuable side-effect of many environmental education programs. The personal decisions made during an action learning experience are good practice in applying one's own values concerning the environment [77]. A problem to be investigated can range from being involved in local social action for saving a piece of land from unwise development [78], to identifying rare and endangered plants and studying their role in the ecosystem as a means of enhancing learners' appreciation for the value they possess [79].

Because of the nature of environmental education, especially that which occurs outdoors, action learning is an integral, vital part of any environmental education program.

The effectiveness of this strategy could be enhanced if a more conscious, systematic effort was made to bring values study into the lesson and follow-up activities.

Confluent education

Confluent education takes a wholistic approach. This strategy states that both cognitive and affective education are inseparable in individual and group learning [80]. Following is an outline of the essentials of confluent education :

- Setting a climate of two-way openness to learning. Setting such a climate includes awareness of the teacher's own values, patterns, and selective reinforcement of learners' responses and behaviors.

- Awareness by the teacher and learner of themselves as legitimate objects of learning and applying deliberate attention to this learning.

- Selection of subject matter which is closely related to the significant personal needs and feelings of the learners. The major reason for inclusion of any subject is the extent to which learners can come to feel significantly related to it.

- Experience-based learning. This means learning that is closely tied to the direct contemporary experiences of learners, and learning in which influences and abstractions are discussed after the concrete learning experience itself.

- Awareness and attention to developing convergent and cognitive processes integrated with action and will, as well as affect.

- Encouragement of the expression of feelings by both learners and teacher.

- Use of feedback to refine and develop learnings.

- Encouragement of divergent and imaginative thinking.

- "Re-subjectivizing" of meanings. This involves the recreation and internalizing of external, social and transpersonal meaning, and perception of knowledge. Fantasy activities are designed to help people experience this transpersonal meaning by means of transferring symbols and active imagination [81].

Confluent education methodologies form an integrated educational strategy to moral education. Specific exercises have been created for adoption into the classroom and informal settings. The methods of confluent education include exercises that link the learners' thinking, feeling and valuing. Confluent education is dependent upon the effectiveness of individual teachers in connecting the study of feelings and values with day-to-day studies and life itself.

In recent years there has been a movement within the field of environmental education toward a stronger emphasis on developing learners' emotional, intuitive and aesthetic appreciation for the environment. Touching a rock, listening to a bird, smelling the air near a city - all of these experiences help learners to identify with their surroundings [82]. Many nature centers and EE programs have a "sensory awareness" component which has as its goal a deeper environmental experience through an emphasis on conscious, deliberate use of the senses. Often these programs try to inspire wonder and awe within the learners and to incorporate a strong feeling for the environment into their self-concept [83]. In this perspective, Steven Van Matre and the Institute for Earth Education have designed total learner involvement into the *Sunship Earth* [84] environmental education programs which are now being run in various locations in the USA. These programs inculcate a sense of belonging in the environment.

There are an infinite number of ways that affective and cognitive learning can be combined and applied to EVE. Feelings can be brought into play by the study of literature,

involvement with the arts and games, the organization of small, private theatre groups that perform plays and skits with environmental and social messages.

Behavior modification

B.F. Skinner refers to behavior modification as a "technology of behavior" [85]. Under his theory, behavior is determined by external reinforcements, which can be either positive (reward) or negative (punishment). This theory assumes that attitudinal and valuational changes follow changes in behavior. It is an external means of control.

Behavior modification occurs constantly during instruction. If a learner performs well on an examination, he or she is rewarded with a high grade or medal. If that same person talks frequently during the teacher's presentation, the consequence is often punishment, such as sitting in the corner, staying after school or getting a note sent home to parents. Such tactics often seem coercive to many people, yet they are a significant part of our behavior control repertoire, in education, at home and in society in general - for instance our legal system.

The use of behavior modification in EVE was proposed by Michael Grear [86]. Grear suggests that other EVE strategies should be maintained but that behavior modification should be used where change is a critical necessity. This could be effected by controlling the positive and negative reinforcements of behavior and by giving people the opportunity for new experiences so that they may better evaluate them. One example of this would be to alter peoples' transportation habits by making mass transit available in an affordable and convenient form, thereby increasing positive reinforcement to get people to use mass transit. The opposite approach would be to increase the negative reinforcement for not using mass transit. This happened in several countries when the cost of gasoline rose precipitously between 1975 and 1981. Many people switched to mass transportation, where it was available, to save money.

This suggestion is not meant to condone unjust or cruel punishment for unwanted behavior. The use of behavior modification should occur in the context of a positive relationship with learners, treating them as individuals to be nurtured, not as objects to be manipulated.

SUMMARY AND CONCLUSIONS

Environmental educators have taken some crucial first steps toward developing effective strategies for environmental values education. There is, at the present time, a need for :

- further theoretical development and empirical research into the substance and effectiveness of the various strategies ;
- the development and implementation of teacher training in EVE theory and practice ;
- greater recognition that valuing strategies and methodologies can be combined so that their strengths are complementary ;
- greater consideration of each learner's level of moral development in EVE ;
- a clear statement of overall EVE goals and objectives, as well as an integrative approach for achieving those ends ;
- greater recognition of the importance of **how** EVE exercises are conducted, so that learners will be taught to relate to Earth in a loving way.

There are presently eight major strategies to be considered in general moral education. These include the laissez faire approach, inculcation, moral development, values analysis, values clarification, action learning, confluent education and behavior modification. Teaching values is an implicit part of all education. Inculcation is unavoidable. Environmental educators would be more effective if they tried to present a consistent role model and consciously chose the values that they want to teach.

Some environmental educators espouse the laissez faire approach, feeling that values will evolve from increased knowledge alone about the environment. While knowledge is an important component of values, EVE strategies need to involve the total learner - knowledge, emotions and actions - in order to be most effective in fostering strong environmental values and behavior.

Several EVE strategies have been further developed in theory and have had exercises created for general use. Since objectivity is highly prized, those strategies that are considered less biased, such as values clarification and values analysis, are often used. Values clarification has become almost synonymous with environmental values study over the last decade. Numerous values clarification exercises have been created for use in environmental values education. While this approach has helped learners to better understand their own values and to become more skilled at decision-making when values are implicated, some problems exist. Values clarification does not consider different levels of moral reasoning among learners of various ages and it emphasizes the process of valuing more than the values themselves.

A number of other valuing strategies have been proposed that are not widely used as explicit components of values education programs. These include action learning, confluent education, behavior modification and moral development. Action learning is an implicit component of all experientially-based EE programs. Confluent education is sometimes used in outdoor sensory awareness programs but seldom are environmental values approached through the study of other subjects in the schools. Behavior modification has been proposed as another means of changing unsound environmental values and behavior by providing learners with opportunities for new experiences and by the use of positive and negative reinforcement.

The moral development approach, based in part on the theoretical foundation laid by Jean Piaget and Lawrence Kohlberg, and combined with an ethic of compassion and care for the earth and people, has tremendous unexplored potential as a basic framework for environmental values education. Strategies for the EVE of young, morally dependent learners should concentrate on the formation of values and the development of an ethic of love (inculcation, moral development, action learning, confluent education and behavior modification). As learners develop an independent system of values and ethics, EVE strategies can concentrate more on enhancing learner self-awareness of values and how to apply these in a caring way that is most beneficial to society and the environment (moral development, action learning, confluent education, values analysis, values clarification and behavior modification).

Environmental values education needs to be more broadly based upon our present knowledge of the strategies used in general moral education. Environmental educators could benefit greatly by combining the findings from years of solid research in general moral education with the knowledge gained from their own specific studies and experiences in environmental values education.

CHAPTER 3

A WHOLISTIC APPROACH TO ENVIRONMENTAL VALUES EDUCATION

A positive environmental ethic, comprised of a set of values and behaviors that help to preserve the ecological integrity of Earth, must be seen as a part of each person's total being. For any EVE program to be successful, the learner's intellect, emotions, psychology, personality, cultural and spiritual background need to be considered. Cultural beliefs play a large role in determining environmental attitudes [1]. Environmental values will be more effective if they are taught early so that they become an integral part of the learner's morality. Developing a strong system of general moral values is the basis on which environmental values must be founded [2].

Before proceeding to outline this integrative EVE strategy, the current confusion and controversy regarding the existence of objective values must be addressed. The following discussion lays the groundwork needed to establish the existence of objective values, in the context of today's environmental realities.

TOWARD A LIFE ETHIC

The term "ecology" comes from the Greek word "oikos", which means house. With each passing year it become increasingly clear that our house, the Earth, including all of the countries of the world, is an ecologically interdependent unit. People the world over are eating food that was grown in the soil of distant countries, thousands of miles away. Both industrialized and non-industrialized countries are burning increasing amounts of oil, much of which is pumped from beneath the desert sands of the Middle East. The sulfur and nitrogen oxide emissions from burning these fuels in the midwestern United States and the industrialized Ruhr Valley of Europe have created lifeless lakes in the eastern Canadian provinces and in the Scandinavian countries respectively. The political, social and economic stresses and strains of these international environmental problems are becoming increasingly manifest. As Henry Nelson Wieman tells us in *Seeking Faith for a New Age* : "The problem is to find and to establish a way of life which all men can follow to the good of all while living on a planet that is swiftly contracting." [3]

> With the development of human intellect, the evolution of life on this planet appears to have reached a turning point. In the past, all forms of life were subject to automatic natural controls... Today this condition has changed. Through the use of his intellect, man has partially escaped from the controls of nature. He has achieved almost unlimited power to multiply his numbers and at the same time to destroy the world's resources that might have supported him. Under the domination of his intellect, the world's life, and the environment of that life, seem to have reached a crossroads, and the choice of direction is for the future to decide. [4]
>
> John H. Storer
> *The Web of Life*

> Though [moral] principles are...built upon decisions of principle, the building is the work of many generations, and the man who has to start from the beginning is to be pitied ; he will not be likely, unless he is a genius, to achieve many conclusions of importance, any more than the average boy, turned loose without instruction upon a desert island, or even in a laboratory, would be likely to make any of the major scientific discoveries. [10]
>
> R.M. Hare

> Let us not begin to doubt in our philosophy what we do not doubt in our hearts...to make single individuals absolute judges of truth is most pernicious. [11]
>
> Charles S. Peirce

Many modern philosophers, including Wayne Booth [12] and Michael Polanyi [13], refute value subjectivism, stating that values are objectively verifiable. The earlier thinking of John Dewey and William James bases value objectivity on learning derived from practical experience. Dewey felt, under his theory of empiricism, that the learning itself was the source of value [14]. James founded the theory of pragmatism, which stated that it was the practical consequences of each experience that were most important [15].

Rokeach, in *The Nature of Human Values*, has studied values among the various ethnic groups in the United States and in several other countries [16]. He refers to two classes of value : 1) instrumental values, by which we demonstrate a preference for specific modes of conduct, and 2) terminal values, which refer to orientation towards end states of existence [17]. The author has added to Rokeach's findings to compile a partial list of values (some of these could be considered either instrumental or terminal).

Instrumental Values	Terminal Values
love : for people	a world at peace
for earth*	national security
generosity*	family security
sharing*	freedom for all people
honesty	equality
ecologically positive behavior*	fraternity*
responsibility	moral courage*
self-reflectiveness*	self-respect
cross-cultural empathy and concern*	mature love
forgiveness	inner harmony
true friendship	wisdom
cheerfulness	a world of beauty
helpfulness	community support*
politeness	a balanced global ecosystem*
tolerance*	(where the actions of people are
kindness*	supportive of the long-term
sacrifice*	ecological health of Earth)
self-discipline*	an egalitarian world order*
literacy*	

In a cross-cultural study, Rokeach found that some of these same values were held highly, but that the degree of importance placed upon each was variable. Certain countries ranked "world at peace" and "national security" as being their first and second priorities

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* Those values marked with an asterisk were added by the author.

respectively. Other countries ranked these particular values much lower [18]. According to Maslow and White (discussed earlier, chapter 1, page 16), the basic needs of people are similar in every culture, and so we tend to emphasize those values that provide for our needs for survival, safety, love, self-esteem and self-actualization.

> Human virtue is guaranteed by the rational preference for the benevolent over egoistic impulses. [19]
>
> David Hume

A life ethic - elements of positive moral value

It is a functional necessity to devise a comprehensive and more concise concept of what constitutes positive moral value. What are the elements of an act or state of being that cause it to possess positive moral value ? The following definition by the author will provide some helpful insight into this question :

> An act possesses positive moral value when it treats people, and the earth, including all living and nonliving elements - the total human environment - in as loving and just a manner as possible. This act strives for justice in the distribution of the common good for all people involved and the preservation of the ecological integrity of Earth. It is based on the moral wisdom of the past combined with a person's lifelong experience and resulting knowledge.

We are one in relationship with the earth and other people, doing "good" supports this relationship. Love and moral goodness are inseparable, they are the elemental components of a life ethic.

A WORD ABOUT VALUES INCULCATION

Before proceeding it is important to address the issue of whether inculcation plays a legitimate role in values education. Numerous social thinkers have supported inculcation among younger children. Frankena recognizes that "moral education involves teaching values, learning and espousing, not only a particular morality, but the very act or idea of morality itself" [20]. "The problem is one of establishing authority without tyranny and combining discipline with humanity... Authority becomes tyranny whenever it treats human beings as things to be manipulated rather than persons to be nurtured and respected." [21] Robert Hall and John Davis have some clear insights into the objections that are raised by those who erroneously equate inculcation with the often-reproved process of indoctrination. Evident in the following quote once again is the crucial factor of human moral development :

> We should really only talk about the possibility of indoctrination when youngsters are psychologically mature enough to make their own decisions. In suggesting this we do not assume that any single point of human development can easily be discerned as the age of responsibility. The development of what psychologists have called "moral thought" is a long and gradual process. There are many gray areas between immaturity and moral responsibility in which, as every parent knows, it is difficult to decide whether youngsters should be allowed to make their own decisions or be held fully responsible for their mistakes. But the existence of this gray area does not undermine our suggested limitation on the term "indoctrination". We should say only that, in general, indoctrination becomes a concern and needs to be avoided precisely as autonomous or mature decision-making develops and needs to be encouraged. [22]
>
> Robert Hall and John Davis

Many teachers, in defense of objectivity, deny that values should be dealt with in education. But valuation in education cannot be denied (see page 20).

There is a need to develop rational, intelligent behavior in moral life. In the formative childhood years (up to roughly 11-12 years) individuals have not yet developed higher powers of moral reasoning. Young children do not give moral reasons or understand the rules behind their behavior. These early years seem to be most appropriate for the inculcation of basic, positive, social and environmental values. Moral education also consists of fostering an ethic of love and justice upon which moral decisions may be based, and of helping the learner to achieve moral literacy - the ability to make conscious moral decisions and to understand how and why those decisions are being made, and how their behavior is affecting the earth and other people. In helping learners to achieve a mature moral life, it is important to remember several points. To teach children morally we must know, as Dewey says, what their "impulses are, and what they are at each particular stage of the child's development, in order to know what to appeal to and what to build upon" [23]. If we know each learner's own moral capacities then we will be better able to provide the element of challenge that is so crucial in moral education. Children will likely reject moral reasoning presented too far below their level of understanding, and fail to comprehend reasoning that is beyond their moral powers [24]. A strong personal knowledge of, and care for each learner is vital to providing a supportive atmosphere that is conducive to emotional, intellectual and social growth. Self-actualized, psychologically healthy people are generally better able to make moral decisions more autonomously [25].

Moral education is partly inculcation in the earlier years - inculcation of positive social and environmental values, which should be established as objectives of a wholistic program of moral education. This practice needs to be part of a strategy that fosters a learner's ability to form his or her own opinions, and helps the learner to develop in his or her powers of moral reasoning.

A WHOLISTIC APPROACH TO ENVIRONMENTAL VALUES EDUCATION

Based on the stages of moral dependency and autonomy, as defined by Piaget and Kohlberg (chapter 1, pages 10-11), this strategy focuses first on younger learners, then on those who are morally autonomous individuals. The specific goals outlined here synthesize all of the preceding findings and discussion in Part I of this book.

Environmental values education for morally dependent learners

Morally dependent learners have not yet developed higher powers of cognitive and moral reasoning or a personal system of ethics. Teaching environmental values at this stage of moral development (roughly the primary school years, up to the age of 11-12) should consist of four elementary components :

- Inculcating positive social and environmental values as part of the general moral education of the individual. Some suggested values are found on page 33.
- Developing within each individual an ethical system of love and justice that is based on seeking the greatest good and distributing that good justly among the human and environmental elements with which he or she interacts.
- Fostering each individual's ability to function as an autonomous, morally literate person, making conscious, caring and responsible moral decisions.
- Supporting each individual in meeting his or her essential human needs, with the ultimate goal of creating a self-actualized, integrated person who is capable and willing to be concerned with social and environmental moral issues within and without his or her personal life. The values education strategies that would be most appropriate at this level of moral development include moral

development, inculcation, action learning, confluent education and behavior modification.

Learners must be made aware of, and taught how to avoid the pitfalls of tainting positive social and environmental values with the personal and institutional prejudice that supports our societal ills, such as racism, sexism, ageism, xenophobia, class discrimination and environmental despoliation.

Based on the previously discussed values, the theory of cognitive and moral development and other findings in the literature, the author agrees with those who conclude that inculcation is a legitimate values education strategy when teaching morally dependent individuals. Vigilance must always be maintained to prevent teachers from disguising personal bias and prejudice behind the pretenses that he or she is indeed teaching positive social and environmental values.

There are a number of valuing strategies that need to be heavily emphasized when teaching young learners. One possible method of enhancing moral development is to effectively involve learners in any situations of real moral significance that arise. Learners could be involved in monitoring the water quality along a local river, or they could devise and implement a plan to control erosion on local hillsides. **Social interaction through teamwork** should also be encouraged at appropriate times to expose learners to higher levels of moral reasoning. **Inculcation and behavior modification** are essential strategies in teaching the young. Moralizing, modeling, experiential learning and positive and negative reinforcement are the chief methods to be used. **Modeling** is an especially effective form of inculcation. The prudent judgment of the teacher is important in helping children to learn. **Confluent education** involves the total individual - self-concept, identity, values, intellect, emotions and personality. This strategy can be more integrated within many classroom subjects as they are normally taught. School and community experience through **action learning exercises** can help learners to connect school with real life and to develop strong environmental values and concern.

Environmental values education for morally autonomous individuals

The environmental educator's responsibility, when teaching individuals who are functioning as morally autonomous persons, consists of :

- acting as a catalyst in helping people to achieve greater awareness and understanding of their own and other peoples' social and environmental values and how these affect their behavior ;
- assisting people in comparing their personal values with those most beneficial to social and environmental welfare, and encouraging the growth of positive values and behavior, based on an ethic of love and justice ;
- continuing to support individuals in meeting their essential needs, in order to help them to develop toward becoming self-actualized, integrated, morally literate people who are concerned with, and active in, promoting the social and environmental welfare.

Most appropriate at this level or moral reasoning would be the EVE strategies of moral development, values analysis, values clarification, action learning, confluent education and behavior modification.

Since the transition from moral dependence to moral autonomy is highly variable among individuals in timing and speed of development, there is a large gray area of transition around the ages of 11-12 years. It is the teacher's task to use his or her own judgment as to the learners' levels of moral reasoning and their specific values education needs (see pages 45-46 for suggestions).

One overriding focus should be the social nature of values. Decision-making should be encouraged as part of the group valuing process. This experience can expose learners to

many different views and can often create dissonance, resulting in the motivation to change, when a learner realizes that his or her behavior is not in accord with the more ideal self-concept.

Most EVE strategies in present use (e.g. values clarification and values analysis) are more suited to morally autonomous individuals. But there are some additional strategies that have much to contribute to teaching morally autonomous people. These include moral development, action learning, confluent education and behavior modification.

In using the **moral development** approach in older learners and adults the teacher is mostly dealing with individuals in the later stages of moral reasoning. The EVE exercises chosen should involve more than just the process of valuing. This is also true of **values clarification and values analysis** exercises. Each teacher can use prudent judgment as a resource and a guide for helping learners in making value decisions.

Action learning challenges the learner's self-concept, personal values, skills and social acumen through involvement in educational or community projects or issues. A different action learning approach is to have teachers act as mentors at ourdoor EE experiences to help foster a strong sense of identity with the natural world. This experience provides a sharp contrast to the highly technologically dependent lives that many learners live.

Confluent education needs to play a central role as a long-term, sequential study in the classroom, as well as serving as a greater focus of informal EE programs. The methods of confluent education can be integrated into the present school curriculum. Schools will continue to have a more profound effect on children's values than short-term EE programs and therefore must be a major focus of environmental values education efforts.

Behavior modification could be an effective strategy where valuational and behavioral change must of necessity occur quickly. Positive and negative reinforcement and experiential learning should be stressed as a means of supporting desired values as well as self-concept and actualization.

An additional element of primary importance to the effectiveness of a comprehensive EVE strategy is that of how the relationship between strategies and methodologies is viewed. The most effective EVE approach for a particular time, setting and group of learners is often a combination of several strategies and methodologies. The choice of which strategies and methods to use should be made in such a way that their strengths are complementary. Careful consideration of the learner's level of moral reasoning should also guide the teacher's EVE decisions.

Education is the process that should be stressed, a mutual process that trains the learner to develop in mind, emotional makeup, creativity, intuition and skill. **Teaching**, or showing the learner how to do it, subjugates the teacher/learner relationship to one of subject/object [26]. The EVE process should occur within a dialogue, as Freire puts it in his discourse on general education, between teacher and learner that fosters love, hope and critical thinking [27]. The development of reflective thinking regarding one's own moral conduct, of a more objective look at one's values and actions and how they affect the earth and other people, is a crucial aspect of helping learners to attain moral literacy.

The author hopes that this wholistic approach to environmental values education will be found useful. This strategy is put forth with the full realization that moral education, like any search for truth, is a journey, and not a destination. No matter what solution is arrived at, there will always be new ideas and further thinking, as well as simple disagreement. Nonetheless, the just-mentioned components do seem to be the key elements of a sound EVE strategy. The job that remains here is to continue developing practical resources in such a way that educators can begin implementing a comprehensive approach to environmental values education. This is the subject of Part II of this book.

> To be a philosopher is not merely to have subtle thoughts...but so to love wisdom as to live according to its dictates. [28]
>
> Henry David Thoreau

PART II

A PRACTICAL GUIDE TO ENVIRONMENTAL VALUES EDUCATION

CHAPTER 4

PUTTING ENVIRONMENTAL VALUES EDUCATION INTO PRACTICE

In 1909 John Dewey published *Moral Principles in Education* [1]. Dewey realized that moral principles could be derived from religious doctrine and viewed as secular values of society [2]. He stated that "What we need in education is a genuine faith in the existence of moral principles which are capable of effective application...we need to translate the moral into the conditions and forces of our community life, and into the impulses and habits of the individual." [3] Thus the school's purpose is "to exercise a certain specific function in maintaining the life and advancing the welfare of society. The educational system that does not recognize that this fact entails upon it an ethical responsibility, is derelict and a defaulter." [4] Wieman concurs, recognizing that "the educational system from the kindergarten to the top levels of the community could be the most powerful agency in the world for promoting a way of life, if educators could agree on the broad principles defining such a way, and would assume responsibility for promoting it" [5]. It is hard to disagree with Chazan's statement when he argues that because of the "three commonly espoused goals of education - transmission of cultural heritage, training of the intellect, individual growth...it is educationally impossible to divorce moral education from the general concerns of education" [6].

> The business of the educator - whether parent or teacher - is to see to it that the greatest possible number of ideas acquired by children and youth are acquired in such a vital way that they become moving ideas, motive forces in the guidance of conduct. [7]
>
> John Dewey

> The only thing needful is that we recognize that moral principles are real in the same sense in which other forces are real ; that they are inherent in community life, and in the working structure of the individual... The teacher who operates in this faith will find every subject, every method of instruction, every incident of school life pregnant with moral possibility. [8]
>
> John Dewey

This chapter focuses on the formal settings of public and private schools that provide for long-term contact between teachers and students. However, many of the ideas presented here **are also relevant to non-formal EE programs.**

It seems self-evident that moral education, what the Japanese call *dotoku* - "to instruct young people in the respect for the common good" - is a noble and essential component of education. There are presently, however, many conditions existing within organizations that act as barriers to establishing and implementing a well-developed moral education program. Each organization has its own special set of conditions that tend to hinder values education, but certain problems are frequently encountered :

- lingering doubts on the use of the classroom for values education by teachers, administrators and parents ;
- a belief that values education more properly belongs with the family or church ;
- norms among peers that discourage open, trusting value activity ;
- uncertainty among teachers on how self-disclosing, probing, accepting and judgmental they should be when dealing with student values ;
- inadequate teacher training in values education ;
- fear of indoctrinating students ;
- exclusive concentration on factual and conceptual "subject matter" ;
- fear of community reaction to the explicit handling of values education in the classroom ;
- an influx into environmental values education of inexperienced people who nevertheless conduct workshops and develop materials ;
- difficulty in sorting out the worthwhile things from all that is available in EVE ;
- ignorance of how to proceed [9,10].

If schools are to be successful in influencing learners to be socially and environmentally responsible people, they will need to conceive, develop and implement a comprehensive environmental values educational approach as part of the general education curriculum. A major element of any such program should be to clearly state the expected role, responsibilities and limits concerning a teacher's involvement in the values education process. With these guidelines conditions should be established so that teachers are not hampered in their efforts to further EVE.

Many schools have yet to address the issue of moral education in even the broadest context. It is hoped that the ideas expressed in these educational guidelines, and in chapter 7, A Teacher Training Model for EVE, will clarify some of the steps that need to be taken in this direction. However, since many schools have not yet developed a formal values education policy, the responsibility to design and implement EVE programs now falls upon the shoulders of each individual teacher [11]. Thus there is a strong need for both the pre- and in-service training of teachers in the theory and methods of EVE.

There are four steps involved in this EVE program :

1) defining EVE goals and objectives ;
2) choosing the appropriate EVE strategies, methods and specific exercises ;
3) facilitating the learning experience ;
4) evaluating student progress.

DEFINING GOALS AND OBJECTIVES

Goals, as opposed to objectives, are broad statements of educational aims that do not necessarily identify specific, observable behaviors. An education goal :

> to educate learners as to the reasons for, and methods of, recycling solid waste, and to foster positive recycling habits.

The term objective, as used in this book, is based on the definition given by Robert Mager :

> An objective is a description of a performance you want learners to be able to exhibit before you consider them competent. [12]

When designing an objective, ask yourself :

- What do I want learners to be able to do ?
- What are the important conditions for them to perform under ?
- With what level of performance will I be satisfied ? [13]

An educational objective :

> Given separate containers in the classroom for recycling paper, aluminum, steel and glass, learners should separate their waste and place it into the appropriate container each time they have something to discard.

Behavioral objectives call for overt, directly observable actions. Covert, or internal learning needs to be demonstrated by actions such as listing, reciting or practising the learned behaviors [14].

The broad goals for EVE have already been outlined in chapter 3 (pages 35-37). Teachers will need to devise more specific goals for their EVE program, and objectives for each EVE exercise. An example would be an EVE program for elementary level learners, involving the study of the Native inhabitants of a region and their relationship with the environment (see exercise called "Culture and Environmental Ethics", chapter 5, exercise 10). The goals of such a program could be to :

1) expose learners to a people who exhibit different, positive ways of relating to their environment ;
2) acquaint learners with a cultural example of people living in close community ;
3) encourage children to incorporate the positive social and environmental aspects of this culture into their own lives.

Some specific objectives for this exercise would be for learners to :

1) state three differences in the ways that the Aboriginal people acquired their food, and compare these to the learner's present reality ;
2) recite the four values taught during the exercise, and give one example of how each value can be applied in the context of the learner's present life ;
3) be able to state whether or not he or she would like to have grown up as the Aboriginal people did, and to give two reasons why this is so.

Dorothy Cox and William Stapp outline some basic understandings to foster when teaching environmental ethics.

1) Lower Elementary (kindergarten, 1st and 2nd)
   a) Children all over the world have similar basic needs.
   b) Every individual has something which he gives and which he receives from society.
2) Middle Elementary (3rd and 4th)
   a) If human beings protect the earth it will be able to continue to support a greater diversity of living things.
   b) Humans can be "stewards" of the earth, rather than careless exploiters of it.
   c) Humans must develop both a way of thinking and feeling about the earth if we are to live harmoniously with each other and our environment.
3) Upper Elementary (5th and 6th)
   a) If humans develop an ecologically sound way of thinking, feeling and acting toward the earth, then we will be able to live harmoniously with each other and our environment.
   b) If we protect the earth it will continue to meet the needs of all living things, now and in the future.
4) Junior High (7th and 8th)
   a) The earth's resources exist for all living things, not just people.
   b) Certain life styles enable people to live as a complementary part of the environment.
5) Senior High (9th, 10th, 11th and 12th)
   a) Only when each of us lives a life guided by respect for the earth and all living things, now and in the future, will we be able to live in harmony with each other and our environment.
   b) An essential part of an environmental ethic is a human ethic based on social justice for all individuals and groups. [15]

Social aims are an integral part of the EVE program, the ultimate purpose of which, as in all education, "is to aid the person to grow to fullest humanness, to the greatest fulfillment and actualization of his highest potentials, to his greatest possible stature" [16].

Knapp outlines some specific social approaches to be incorporated into the way that EVE exercises are conducted :

- trust and caring ;
- respect for self and others ;
- cooperation and cohesiveness ;
- opportunity for input ;
- problem-solving and conflict resolution experiences [17].

GUIDELINES FOR CHOOSING AND IMPLEMENTING THE APPROPRIATE ENVIRONMENTAL VALUES EDUCATION STRATEGY

Of the many EVE strategies espoused by environmental educators, each has its own strengths, weaknesses and place within the EVE program. No one strategy can serve all of a teacher's EVE needs. A combination of several EVE strategies are often needed given the specific educational situation and the nature of the students' personal and/or collective backgrounds.

> The process of developing operative educational principles and practices is related to a host of factors...sociology, anthropology and psychology as well as the realities of the particular educational situation, the nature of the teaching staff, the nature of the curriculum and the particular moral values of the school and the society. [18]
>
> Barry Chazan and Jonas Soltis

This is easily enough said, but how do we decide which of many possible acts is morally right ? Using some of the basic values that were listed earlier (see page 33), it is our responsibility to reach for this ideal : "an act is **right** if and only if it or the rule under which it falls produces, will probably produce, or is intended to produce **at least as great a balance of good over evil** as any available alternative ; an act is **wrong** if it does not do so" [19].

Chazan and Soltis indicate that when choosing an appropriate moral education strategy, or combination of strategies, teachers must assess their own capabilities, those of the students, the nature of the strategy and the situation in which instruction will occur. If a teacher has been well-trained with the necessary knowledge and skills for effective EVE, then he or she can choose the proper approach to EVE with confidence. Following are some of the major parameters to be assessed when choosing the appropriate EVE strategies.

Knowledge of the teacher's own capabilities

A sound approach to EVE is a cautious one. Before advancing into EVE exercises it is important to assess one's own abilities - interpersonal and group organizational skills, knowledge of values philosophy and psychology, adeptness in handling EVE methodologies and the nature of the educational setting and constraints. **A thorough knowledge of one's own values and priorities is essential.** It may be easier to begin with well-planned, structured EVE exercises and to then move into more free-wheeling discussions. For instance, values analysis exercises are highly structured and easier to use when teaching morally autonomous individuals than would be a values discussion following the viewing of an environmental film. In teaching young, morally dependent learners, it is important to be consistent in modeling socially and environmentally positive values.

Right actions are those that are morally and ethically sound when weighed against all other possible actions that may be taken. For instance, honesty is normally a value to be upheld, yet circumstances may force an action in which postponement of knowledge of the truth could be morally justified, say, for medical reasons. Here is an example : Mr. Perry is very ill in the hospital with a severe heart condition after having had a heart attack. Mrs. Perry was involved in a bad car accident on her way to visit him at the hospital. Should Mr. Perry be told immediately about the accident with the knowledge that he may have a relapse because of the resulting shock ? Moral prudence might dictate that it is better to delay telling Mr. Perry until he recovers to sufficient health so that his life would not be jeopardized by the shock caused by news of the accident.

Knowledge of the students' values

The need for a thorough knowledge of the student's values and backgrounds, both as individuals and as a group, cannot be overemphasized. An effective approach to student values involves developing an empathetic relationship in order to better understand their view of the world. "Solidarity requires that one enter into the situation of those with whom one is solidary. [20] This insight will help the teacher to design an effective EVE program that uses appropriate strategies.

There are several major issues regarding the teacher's knowledge and handling of students in EVE :

- The student's level of cognitive development and moral reasoning is basic to the moral education program [21]. Strategies should be chosen according to the students' stature as morally dependent or autonomous beings. The strategies of moral development, inculcation, behavior modification, confluent education and action learning are most vital to younger, morally heteronomous students. With the exception of inculcation, the above strategies are also suitable for use with morally autonomous individuals, along with values analysis and values clarification. Some strategies are appropriate at all levels of moral reasoning because their methodologies and subject materials are adaptable.
- It is important to build upon and enhance the student's total value system, and to incorporate environmental ethics into that system.
- Knowledge of the peer pressures that are placed upon students will help a teacher to work **from** that point, through understanding and empathy. The theories of value formation and change tell us that values are socially derived and strongly intertwined with self-concept. A teacher will be much more effective in values education if he or she can understand the students' points of view.
- The teacher should check whether or not students are consistent in their verbal statements and actions. This is an excellent way to conduct an ongoing evaluation of a student's progress.

Assessing the learner's level of moral reasoning can be done in several ways, through observations and written responses to questions of moral dilemmas. As mentioned earlier, the transition period from moral dependency to autonomy, around the ages of 11-12 years, or at the end of the primary school period, is a gray area that may vary greatly among individuals.

The teacher will need to take mental and written notes about each learner's behavior in relation to other students and his or her environment. If a child is seen sharing crayons, for instance, the teacher may inquire, "That was good of you to share your things, why did you do it ?" If the child replies, "Because you told me to share them", then this indicates a compliance with external moral rules - a sign of a morally dependent orientation. If, however, the child responds, "Because they're everybody's crayons and she wanted to use some of the colors that I had", he or she would be revealing a morally autonomous bent. In this second response, the reason behind the sharing would be an adherence to an internal moral belief that co-ownership of property means that property should be shared equitably. Studying written and oral responses to moral dilemmas, such as the one faced by Heinz (chapter 1, page 13), will also reveal a learner's level of cognitive and moral reasoning.

Periodic assessment of each learner's moral reasoning status and progress is an essential component of any EVE program.

The following is a guide to some response patterns of morally dependent and autonomous learners.

Responses indicating moral dependency :

"I did it because :

- Mrs. Jackson told me to ; (respect for authority)
- she did the same thing for me so I'm paying her back ; (payment in kind)
- they're all doing it ; (following the leader)
- I was afraid she would hit me if I didn't do it ; (avoiding punishment)
- he said he'd share his lunch with me if I did it ; (seeking reward)
- I wanted to ; (if that is how I feel, then it's alright to do it).

Responses indicating moral autonomy :

"I did it because :

- we all agreed that to do it this way would be best for all of us ; (group contract, mutual understanding, reciprocity)
- she needed the comfortable chair more than I did because she was sick ; (equity - the demands of those with greater needs sometimes supercede those for people who are less needy)
- even though it is more work for me to bicycle into school, I save energy each time I leave my care at home ; (the health of the environment may supercede my comfort and convenience needs at times)
- I never could have faced myself if I had ignored his call for help ; (avoiding condemnation by one's own, internal moral conscience)
- they have as much right to be well fed as we do ; (justice, equality)

Caveat :

1) There is no hierarchy implied in the order of listing of these responses within each of the two moral states.
2) The teacher should take care to judge the learners' levels of moral reasoning with a profile revealed by numerous answers and observations by and of the learner in regard to moral situations.

The nature of the EVE strategy

There are a number of important characteristics of EVE strategies to consider when deciding on which strategy to use for a particular individual, group, and set of operating conditions. After consideration of these factors it is up to the teacher's own judgment to decide whether a strategy is, or is not appropriate. It will suffice to list some important points for consideration :

- Is the level of moral reasoning needed for the strategy appropriate to the students ?
- Does the strategy fit into the regular curriculum ? (Environmental values education should be incorporated into the existing curriculum wherever possible.)
- Are the objectives clearly stated in educational materials ?
- Do these objectives fit your own ?
- Is the reading level appropriate to the students ?
- Is there no racial or ethnic bias in the materials ?

- Is special training required to use the educational materials - if so is it provided ?
- Will attaining school and community acceptance be a problem ?
- Is the time sequence of the educational materials suited to your needs and those of the students - is it a long-term activity or a one-time only experience ?
- Does the teacher's guide offer guidelines for applying the procedures or strategies ?
- Are the rights of learners to withhold personal information protected - are the students old enough to make that decision with the strategy being considered ?
- Are specific evaluation procedures or instruments provided to determine student growth and program effectiveness ?
- Have the educational materials been, and are they still being field tested ?
- Do the educational materials contain carefully planned, detailed lessons or are they basically a resource that teachers can use any way they see fit ?
- Is the strategy suitable to the class size or should the students be arranged in smaller groups or a different strategy adopted ? [22]

The descriptions of each strategy in chapter 2 provide the practical information that is needed to plan and conduct exercises within each of the seven EVE strategies.

FACILITATING THE ENVIRONMENTAL VALUES EDUCATION EXPERIENCE : A SOCIAL ENDEAVOR

Environmental Values Education is a process of both means and ends : the ends being socially and environmentally positive values and behavior, the means being an ethic of love and justice. For this reason, the way that EVE is practised is equally as vital as the educational aims of the EVE program. Values are not things that can be taken out of context, they are part of each person's whole self. We can't examine the parts and generalize about them to know the whole [23].

The emphasis upon educating the total learner includes emotional skills and involves intuition, creativity, critical thought and synthesis.

> A comprehensive theory of instruction should seek to prescribe not only optimal levels of intellectual uncertainty, risk and relevance, but also optimum levels of emotional involvement and personal curiosity... We learn best when we care most. [24]
>
> Richard M. Jones

> Value shifts can best be affected with educational emphasis on the insight, intuition, wonder and feelings of dreams and culture, versus a quantifying, engineering, controlling logic. [25]

This is why education through theatre, storytelling, dance, music and dreams is particularly important in values education, and why confluent education is such an appropriate strategy for EVE. Involving the learner means experiential, active, relevant and meaningful learning, in the school and community.

Each person has a "seed of tendencies to grow" [26]. The teacher's role is to create a supportive environment. The students need to be helped in loving themselves and other people. As Knapp and Goodman put it, "positive nourishing seeds - rather than toxic ones - are at the root of helping humans to grow, to learn and to love" [27]. It is in people who are centered in self love and esteem, with a strong sense of understanding and empathy for others and their surroundings, that positive values and behaviors can best take root.

The teacher should avoid discounting the learners when discipline is called for. If a child is seen littering or sticking a knife into the bark of a tree, and the teacher

responds with "stop that stupid or you will make a flunking grade for the lesson today", the student may comply. But he or she will have learned that morality means power and coercion. The following dialogue is a positive alternative.

> "Mark, do you think that cutting that tree is a good thing to be doing ?" (teacher)
> "Well, no, I guess not."
> "Why not ?" (teacher)
> "Because it might hurt the tree if I cut into the bark ?"
> "That's right, and the tree may become infected more easily - it may not live as long." (teacher)
> "Yeah, I guess you're right, I'll put the knife away."

This is an idealized conversation, but the author has had many such encounters with learners, who are usually willing to comply when he or she sees the harm that is being done.

From the perspective of a positive dialogue with the learner, a teacher can be a powerful, positive moral influence through the example that he or she sets as a role-model, and by joining the learners in a process of discovering a positive way of interacting with their world. It is important to speak their language and to avoid betraying their trust by making undue, unjust use of power. Trusting in love as a motivating force is not easy, but it is essential in taking a wholistic approach to moral education. As Dostoievski once said :

> Seeing the sins of men, one sometimes wonders whether one should react to them by force or by humble love. Always decide to fight them by humble love. If it is carried through, the whole world can be conquered. Humble love is the most effective force, the most terrific, the most powerful, unequaled by any other force in the world. [28]

With love, Maslow tells us, we will be better able to avoid the temptation to alter, tamper with or make demands of students, except in those ways that will nurture them as individuals. Love aids our objectivity [29].

For all of the above reasons, social values are an integral part of EVE. Using group situations wherever possible, when designing or choosing activities, will foster social development. "The child is an organic whole, intellectually, socially and morally, as well as physically. We must take the child as a member of society in the broadest sense, and demand for and from the schools whatever is necessary to enable the child intelligently to recognize all his social relations and take his part in sustaining them"[30].

Therefore values education will be most effective if it focuses upon active social interaction as a means of teaching values. For instance, competition is not conducive to moral development because it is asocial - fostering feelings of superiority among some and inferiority among others [31]. The best method is one that appeals "to the child's active powers, to his capacities in construction, production and creation, marks an opportunity to shift the center of ethical gravity from an absorption which is selfish to a service which is social" [32].

Some social values that moral education can help to foster are :

- concern for others as equals ;
- awareness of other peoples' feelings and emotions [33] ;
- force of character ;
- good judgment ;
- delicate personal responsiveness [34] ;
- awareness of and concern for how our actions affect the environment and in turn the lives of other people ;
- a better understanding of cultural differences and a greater sense of a shared, interdependent, global cultural system ;
- a desire for reducing institutional and personal prejudices and discriminations ;
- a strong value for a world at peace.

Moral education also needs to :

- attach importance to spontaneous impulses ;
- emphasize active constructive powers ;
- foster inhibition of impulses only as a means to seeking positive value [35] ;
- give the child a chance to exercise judgment in making choices ;
- allow children opportunities for casual and free social intercourse between learners and between the learners and the teacher.

The ability to be a socially positive and sensitive individual, to be able to relate well to and enjoy other people, is a vital part of a strong self-concept. We have already seen that it is much easier to foster sound values and change undesirable ones if the person involved has a positive self-concept. Thus general moral education, invoking social values, will have a beneficial effect on environmental values by enhancing the learner's self-concept, concern for others, and receptivity to EVE. It also provides a firm base on which to build the additional value of a strong environmental ethic.

Paulo Freire recognizes that love, hope and critical thinking are crucial in fostering critical conscience, in learners and among groups of people [36]. It is important to share the educational journey with the learners, responding to their needs. Students should be involved, as much as is practical, in the EVE process, including planning, implementation and evaluation. Says Freire, "Liberating education consists in acts of cognition, not transferals of information." [37] There are important parallels with the emergence of social and environmental conscience at the international level. Each country, and every individual, can be seen as an emerging entity to be nurtured by the world community.

EVALUATING STUDENT PROGRESS

The ultimate aims of an EVE program are to create positive environmental values and behavior patterns among learners. At first appearance, it would seem that evaluating students in these areas would be difficult. If, however, the EVE objectives are clearly stated at the outset of the program (recall sample objectives on page 43), evaluation is a simple proposition. A student either can or cannot demonstrate that he or she has successfully mastered the subject matter by reciting, for instance, the four values and behaviors covered in the second objective of the Native American program or by showing that he or she is not able to do so. Evaluation consists of establishing whether or not the EVE objectives have been met.

A list of methods for assessing student progress in values has been suggested by Clifford Knapp :

- answers to related questions ;
- observing behaviors that demonstrate student attitudes and behaviors ;
- through written stories ;
- through stands taken during a debate ;
- student self-reports [38].

SCHOOL AND COMMUNITY POLICY TOWARDS VALUES EDUCATION AND CONTROVERSIAL ISSUES

Of utmost importance to the teacher is a thorough knowledge of the values, educational policy of the organization and the feelings of parents and the general community about teaching values. As stated earlier, there are a number of reasons why many educational institutions and communities have established barriers to values education, such as fear of

indoctrination, belief that values education belongs in the home or church and the feeling that teachers may use their influence to indoctrinate their own personal beliefs and values. For these reasons it is important that the teacher be clear on what the institution's policy is concerning values education and how parents will react to activity conducted in the classroom.

Controversial issues, too, will need to be approached cautiously. Teachers will need to assess their own feelings concerning controversial issues in the classroom, as well as to become familiar with school policies covering this subject. Each teacher should also be prepared with a thorough familiarity of his or her educational institution's policy, as well as parental and community attitudes towards values education and controversial issues.

One way to avoid biased teaching of controversial issues is to analyze the subjects of bias, prejudice and ideology. Students who are fluent in the ideas of controversy are better able to approach moral issues objectively.

> Students are more capable of making sound decisions if they are aware of their biases and are able to distinguish fact from propaganda... The attempt to uncover bias is of great value to both teachers and students. It often forces people to take a fresh look at their convictions and to examine difficult issues in a fresh light. [39]

William Stapp has outlined some specific guidelines for teachers to consider when handling controversial issues in the classroom :

1. The classroom teacher must be aware of and take into account the policies of the local Board of Education regarding the handling of controversial issues.
2. The teacher should know the "times", the student body, and its cultural or sub-cultural make-up as they pertain to the issue at hand.
3. The teacher should assist pupils in identifying problems, collecting information, identifying alternative solutions, evaluating solutions, developing a plan of action, and working toward a selected solution or solutions.
4. Emphasis should be placed on considering the issue from an ecological, economic, political, social and technological point of view.
5. The teacher should strive to bring in divergent views, references and resource persons.
6. Emphasis should be placed on considering all aspects of a problem before making decisions.
7. Emphasis should be placed upon the fact that a student may or may not agree with another's point of view but should respect that person's right to it.
8. Before progressing into the action phase, the class should consider the social implications of any action [40].

Controversial issues are important because studying them can lead learners to become motivated and involved with seeking solutions to the crucial modern problems that we face, such as nuclear weapons and world hunger. There is a need for individuals who are working with existing institutions to effect rapid, positive change in how the problems of the world are, or are not, being addressed.

Values education itself can be a slow, at times glacial process ; it is building for future generations by creating people who are caring, concerned and active in bringing about positive social and environmental change. In these times, progress is often thought of in terms of minutes, days or months. Value shifts among peoples may be imperceptible during our lifetimes. Values education builds for the long-term future, not just for the present generation.

In his concluding analysis in *Education and Values*, Douglas Sloan expresses his faith that :

> a fundamental unity joins scientific insight, artistic insight and moral insight and that the vision of an ethical, intellectual and integral curriculum may yet be a genuine possibility. [41]

SYNOPSIS

This chapter discussed some of the constraints that work against the development of an integrative approach to environmental values education. Four key steps to establishing a wholistic EVE program were outlined :

1) defining EVE goals and objectives ;
2) choosing the appropriate EVE strategies, methods and exercises ;
3) facilitating the learning experience, with an emphasis on the social nature of values education ;
4) evaluating student progress.

Some perspectives and guidelines were then shared regarding the teacher's convictions, and school and community policy toward EVE and controversial issues. The next two chapters, 5 and 6, concentrate on specific exercises that may be of use in the environmental values education of primary and secondary learners.

CHAPTER 5

ENVIRONMENTAL VALUES EDUCATION EXERCISES AT THE PRIMARY LEVEL - MORALLY DEPENDENT LEARNERS

The following exercises, and those in chapter 6, are meant as models that can be adapted to the local environment and the special needs of learners. They have been chosen with an international audience in mind and with the hope that teachers in various countries may find some useful components in each exercise. The final ingredient, each teacher's own creativity, will bring these activities to life for their learners.

The issues covered by activities in this chapter occur in the following sequence :

	Issue	Page
1)	value decisions and personal commitment	53
2)	transportation	54
3)	solid waste	55
4)	energy	57
5)	resource management	58
6)	pollution	59
7)	environmental aesthetics	59
8)	lifestyle and environment	60
9)	culture and environmental stereotypes	62
10)	culture and environmental ethics	64
11)	world community	66

The teacher will find ideas for additional guidance concerning the development of the above exercises according to various EVE strategies on the following pages of chapter 2 :

Strategies	Page
action learning	26
behavior modification	28
confluent education	27
inculcation	22
moral development	21
values analysis	23
values clarification	24

EXERCISE 1 : VALUE DECISIONS AND PERSONAL COMMITMENT

Concept : A person's decisions are a result of his or her values which may in turn result in personal responsibilities.

Goal : To suggest that personal choices often bear commitments and personal responsibilities.

Strategies : Action learning, Confluent education.

Reference [1] **:** Bowman (1979), p.27.

Materials : pencils, paper, books on pets and pet care, local veterinarian (if available), class pet.

Exercise :

Invite your students to think of an animal they would most like to have as a pet. You might ask them to create a drawing and a short story describing their choice. After each student has had a chance to share his/her "pet wish" with the rest of the class, instruct them to research the initial cost, type of care their chosen pet will require, cost of care - both medical and food, housing needs, etc. Perhaps a local veterinarian could be invited to discuss care and cost of pets with the class to aid in their research.

After the students have collected information on the cost and care of their pets, pose questions as to whether they have the required facilities and income to properly care for their animal. Would they be willing to spend any allowance they might receive or do odd jobs for the privilege of having such a pet ? Can we think of pets that would be less costly and require less care than the ones we have chosen ? Would anyone be willing to substitute the lesser care/cost pet for theirs ? Why/Why not ?

Author's Note - This activity can be carried one step further by having the class decide on a class pet that would be everyone's responsibility to care for. The pet could be acquired and kept in the classroom. Be sure to clear this decision with school policy.

EXERCISE 2 : TRANSPORTATION

Concept : There is a great potential for reducing energy usage through simple changes in transportation habits.

Goal : To organize and analyze the data relevant to automobile use in the community ; to explore ways in which alternative uses of motor vehicles could improve environmental quality.

Strategy : Confluent education, Moral development, Action learning.

References [2] **:** Adapted from Unesco, *Environmental Problems in Big Cities*, 1983.

Materials : graph paper for tabulating data, paper and pencils.

Exercise :

1. Divide the class into four teams. Tabulate the size and number of cars, buses, motorized bicycles passing corners of the school and the number of people in each vehicle. Each team will work in groups of two - one will observe and count, the other will record. These pairs will record data as small cars, large cars and buses and the number of passengers in each. All teams use the same code : S 1 (small car and driver only), S 3 (small car, driver and two passengers), L 2 (large car and two people), B L (bus light load), B F (bus full load), etc.
2. For more accuracy, different times of the day should be used and several days ought to be used for sampling.

3. The whole class should have a briefing session before the tabulating is done so that all are in agreement on code used and how to judge the fullness of bus and size of car.
4. When teams return they will record their data on nine different sheets. Example :
   a. Friday 8.30-8.50 a.m.
   b. Friday 10.45-11.10 a.m.
   c. Friday 12.30-12.50 p.m.
   d. Monday 8.30-8.50 a.m.
   e. Monday 10.45-11.10 a.m.
   f. Monday 12.30-12.50 p.m.
   g. Tuesday 8.30-8.50 a.m.
   h. Tuesday 10.45-11.10 a.m.
   i. Tuesday 12.30-12.50 p.m.
5. On the day that organizing data is to be done, form the class into nine groups. Each group will take one master sheet of data and organize it by counting each classification. Example : S 1 ; S 2 or 3 ; S 4 or more ; L 1 ; L 2 or 3 ; L 4 or more ; B L ; B M ; B F. Total of tabulations should equal total of cars listed. When each group finishes the count and checks, the tallies can be put on squared paper and some totals can be figured.

Discussion :

1. Can you form any conclusions about how people are using motor vehicles ?
2. Can you suggest some ways we can use automobiles and buses to economize or save gasoline ?
3. Did you have any difficulty with the collecting of data ? If so, can you suggest how the method can be improved ?
4. Did you meet with any reactions from people as you collected your data ?
5. How do the results from your community compare with the results from a community in another country ? In which community are motor vehicles used most wisely ? Which country would have least environmental problems associated with motor vehicle use ?

Author's Note -

Follow up to the exercise :

Present the following moral dilemma to the learners :

Due to the air pollution and traffic congestion caused by the abundance of gasoline powered vehicles, the government is going to issue a policy to restrict their use. One of the policies they are considering is to increase the distance from school that children must live to ride the bus. About one third of the children now riding the bus will have to begin walking to school within one month if the policy is passed. Children will be asked to vote "yes" or "no" on the new rule.

Discussion :

1. What are the issues to be considered ?
2. How will the rule affect the children ?
3. What benefits may result from the new rule ? What are its drawbacks ? Alternatives ?
4. Weigh the consequences of each stand, and hold a straw poll of the class. Or the children can present an alternative plan.

EXERCISE 3 : SOLID WASTE

Concept : "Garbage" is a resource that can be conserved ; the need for recycling reflects a society's attitude toward reusing or extending use of materials.

Goals : To foster a positive environmental behavior - recycling among learners; to help learners to understand why recycling is important ; to provide learners with the opportunity to recycle classroom wastes.

Strategies : Inculcation, Action learning, Behavior modification.

Reference [3] **:** Adapted from Kohuth and Marsh.

Materials : copies of chart, several small waste containers for classroom use, an equal number of large containers to store the recycleables, sign for each type of material to be recycled.

Exercise :

Using the following chart, ask each student to conduct a home survey and cite examples of "new uses" for "old products".

HOUSEHOLD RUMMAGE "RECYCLING"			
PRODUCT	OLD USE	NEW USE	ENVIRONMENTAL BENEFIT
1. Cracked coffee mug	Beverage container	Pencil holder	No solid waste
2.			
3.			
4.			
5.			
6.			
7.			

Discussion :

1. From the home survey, what can you conclude about the habits of the class members' families with regard to extending the use of products in the home ?
2. What are some of the environmental values of extending the use of various products ?
3. What are some of the environmental problems created when people choose not to reuse materials ?
4. Are countries around the world affected equally by the degree of reuse practised in your community ? Why or why not ? In what ways are other countries affected by reuse practices ?

Students might enjoy conducting a "Rummage Fair" or sale, with their creations on display (seek parental assistance).

Author's Note -

Follow-up to the exercise :

1. Set up the containers in the classroom and label each one according to what will be placed in it to recycle (the local markets for recycleable goods will determine what can be recycled). For instance, containers may be labelled clear glass, colored glass, mixed paper, aluminum, etc.
2. Establish ground rules that everyone will participate and that each learner is in charge of getting his or her waste into the appropriate container.
3. Make up a schedule as to who will empty the classroom containers into the larger storage bins.
4. Teachers may coordinate this system with other classes, rotating schedules as to who will bring the recycleables to the nearest recycling station. An ideal goal would be to get parents involved in this aspect of the program.

EXERCISE 4 : ENERGY

Concepts : The production, distribution and use of energy have environmental, political, social and economic consequences.

Goals : To compare the use of energy in children's lifestyles at the turn of the century with the energy usage of today's youth ; to suggest the relationships between the use of energy and the quality of the human environment.

Strategy : Confluent education.

Reference [4] : Adapted from Coon and Bowman (1978) pp.51-52.

Materials : list of questions, paper, paint, crayons for mural.

Exercise :

Ask students to interview someone who is old enough to remember what life was like before the days of great usage of oil and natural gas. (A grandparent or elderly neighbor will likely be very pleased to be asked.) Ask questions such as those below and others that individual students can think of. Ask students to record responses for subsequent reporting and class discussion.

As final questions, ask the person being interviewed to indicate how he or she finds life more enjoyable now as a result of much greater use of energy. In what ways does he or she like "the good old days" better ?

After the interviews, divide your class into two groups, asking one group to make a mural of "Yesteryouth" and the other group to construct a mural depicting the lifestyle of today's youth. Each child should be responsible for one item (i.e. a form of recreation, toy, game, or family fun) and a paragraph describing his/her choice.

INTERVIEW QUESTIONS

1. What kind of lights did you use in your home ? _____
   How was it heated ? _____

2. What fabrics were clothes made of ? _____
   Was clothing harder or easier to take care of ? _____
3. What sort of washing machine did you have ? _____
4. What kind of stove (and what kind of fuel) did your family use for cooking ? _____
5. How did you keep your food fresh ? _____
6. How was food packaged when it came from the store ? _____
   What did milk come in ? _____
7. What sort of soap did you use ? _____ Did it clean as well as the cleaners we have now ? _____
8. How was your water heated for bathing and laundry ? _____
9. Did your family have a car ? _____ If not, how did you travel ? _____
10. Did you have a radio ? _____ What did it look like ? _____
    _____ Did you go to the movies ? _____
11. What kinds of entertainment did you enjoy ? _____
12. What were some of your favorite games and toys ? _____
    What kind of family recreation did you enjoy ? _____

Discussion :

1. When the murals are completed, discuss the kinds of energy used by both groups of people. Who used the most energy in their everyday lives - yesterday's youth or today's ? Is energy important for human well-being ?
2. What impacts might a greater use of energy have on the world environment ? What could you give up to save energy ?
3. What do you believe would be an "ideal mix" of old and new lifestyles as far as the use of energy is concerned ? (Can be a writing assignment.)
4. What changes are likely in the coming years ?

EXERCISE 5 : RESOURCE MANAGEMENT

Concept : The management of natural resources is value oriented.

Goal : To suggest that lifestyles are related to natural resource usage.

Strategy : Confluent education.

Reference [5] : Adapted from Bowman (1979), p.37.

Materials : chalkboard and chalk or large poster board to draw the figures on.

Exercise :

Share with your students that the average person in a big industrialized country uses 100 gallons of water per day. The average person in a medium industrialized country uses 50 gallons of water per day. The average person in a developing country uses 5 gallons per day.

Now ask the following questions :

How much more water does a person from the big industrialized country use than a person in the medium-sized one ?

How much more water does a person from the big industrialized country use than a person from a developing country ?

What might account for these differences ?

What do these differences say about the way people live in the different countries ?

What if everybody in the world used the amount of water per day that the average person does in the big industrialized country ?

EXERCISE 6 : POLLUTION

Concept : Conflicts emerge between individual values and the maintenance of environmental quality for the general public.

Goals : To examine an environmental problem and help learners formulate possible courses of action toward solutions for the problem.

Strategy : Action learning.

Reference [6] : Adapted from Vizzini.

Materials : bags for collecting litter, Litter Ballot.

Exercise :

Divide your class into groups of four or five. Assign each group a specific area on your school grounds and/or surrounding community to examine for litter. Ask each group to either list or collect examples and as a group to decide whether or not litter is a problem in their assigned area. Have each group share their findings with the rest of the class.

Hold a discussion on what makes something a problem : What criteria did the groups use to decide whether litter was a problem in their areas ? Compare and contrast the specific group areas. Were some areas considered to have more of a litter problem than others ? Are there certain environments that people tend to litter more than others ? Ask your class to offer realistic solutions to the problem litter areas. Is there any conflict between what students see as a problem and propose as solutions and what action they say they would be willing to take ?

EXERCISE 7 : ENVIRONMENTAL AESTHETICS

Concept : The management of natural resources is value-oriented.

Goal : To help students express their reasons for preferring certain environments.

Strategies : Moral development, Confluent education.

Reference [7] : American Forest Institute.

Materials : magazines and newspapers for pictures, paper and pencils.

Exercise :

Ask your students to collect pictures of different attractive and unattractive environments (preferably all in color or all in black and white), including such places as urban office buildings, forests, deserts, old houses, contemporary homes, mountains, lakeshores, ocean beaches, farms - the largest variety possible. Number the pictures and display them in random order.

Ask each student to select, in order, the top five choices and the last choice of places in which he or she would like to spend a specified number of hours or days. If appropriate to the students' learning, ask each student to write down reasons for selecting the places.

Discuss the reasons in class. Find out if different people chose the same environment for different reasons ; for the same reasons. Find out if what the students thought they could do in these environments affected their choices.

After this brief discussion, ask your students to close their eyes. While sitting comfortably in the classroom or outside and with their eyes still closed, guide the students through an imaginary trip in their minds to the places they selected as their first and last choices. Once the students have traveled to these places in their minds, ask them to open their eyes.

After some sharing of what they saw and felt, ask the students to write a description of an imaginary day spent in the environments of both their first and last choices. Ask students to include in their descriptions possible reasons for their dislike of a certain environment and how they would change it to make it more appealing. Once written, ask the students to share their descriptions, including their suggestions for environmental improvement. Talk with the students about how such suggestions relate to current public demands for a quality environment.

Author's Note -

Follow-up to the exercise : A Moral Dilemma

There is a natural area that surrounds a beautiful lake, some kilometers from the nearest main road. Many people come here to fish or to enjoy the quiet solitude. In recent years, more and more motor vehicles are using the trails around the lake because it shortens by several kilometers the distance to the next town. The long-time users of the lake are trying to get the area closed off to all motor vehicles. Recently, some people have been seen arguing and fighting over this issue near the lake. Should the town pass a bill to prohibit motor vehicles ?

EXERCISE 8 : LIFESTYLE AND ENVIRONMENT

Concept : Some items considered important for a comfortable lifestyle are less necessary than others when environmental consequences are considered.

Goals : To help students to reflect on what they need to lead the "good life" and to better understand material wealth.

Strategy : Confluent education.

Reference [8] : Miller, pp.11-13.

Materials : handout attached (items for the "Good Life"), old magazines and catalogues.

Exercise :

Step 1. Distribute one copy of the handout to each student. Ask students to fill out the handout individually.

Step 2. Divide into groups and have each group come up with a list of items "necessary" for the good life. Check those items your group would be willing to give up.

Discussion :

1. Which items are most commonly listed as essential to living the "good life" ?
2. What good reasons can students find to need these items ?
3. Why are students willing to give up certain items ? How do they feel about giving up certain items ?
4. Did the "have" column come close to matching the "good life" column ? Can students explain the difference ?
5. Can students account for differences of opinion on the "good life" ?
6. Do students think that the class's list of essentials for the "good life" would be the same in other cultures ? Why ?
7. Which items are associated with food ; which with energy sources ; which are based mainly on renewable resources and which on non-renewable resources ?
8. How much would your class's list contribute to the depletion of natural resources ?

ITEMS FOR THE "GOOD LIFE"

Name of items	Which do you have ?	Which do you think are necessary for you to live the "good life" ?	Which items you have would you be willing to give up ?

Extending the activity :

1. Obtain a collection of expendable old magazines and catalogues. Cut out pictures of items on the list of essentials and post around the room. If students must limit the list of essentials to ten, which ones would they choose ?
2. Hand lists of items "necessary" for the good life around the room. Return to the lists at a later time and re-evaluate. Would you make any changes on the original lists ? Why ?

EXERCISE 9 : CULTURE AND ENVIRONMENTAL STEREOTYPES

Concept : Part of the meaning of a culture can be understood by exploring the interaction of societal values and events with the environment.

Goals : To examine ways animals are portrayed in children's literature and determine the images that are often conveyed as to their roles ; to introduce positive environmental values.

Strategy : Confluent education.

Reference [9] : Ahearn.

Materials : Stories, pencils, paper, crayons.

Exercise :

Animals are often portrayed in children's literature as being like human beings in that they are able to speak, wear clothing, live in houses, and exhibit human characteristics such as a fox being cunning, a wolf being evil, or a crow being either a thief or conceited and foolish. This is knows as being anthropomorphic or showing anthropomorphism. Certainly fairy tales are clever and enjoyable and they sometimes teach a valuable lesson. However, unless children are provided with experiences that portray the animals in their actual roles in the ecosystem, children will retain their misconceptions about these animals into adult life. Therein lies the danger. For example, many people think of deer and fawns as graceful, inoffensive, gentle and lovely. But an adult deer is about as safe as a rattlesnake, poised inches away from your foot. In fact, it is probably less safe since everyone recognizes a rattlesnake as extremely dangerous. Most people do not know how deadly a buck deer can be. Hundreds of people have met tragic deaths from does and bucks. People need to realize that antlers are fighting weapons that the bucks use in their struggles against rival bucks for possession of does.

The animals that are perceived as bad have often received no human consideration when their needs directly interfered with man's. Many other animals are maligned by our stories. Animals that are predators kill because they need to eat, not because they are killing machines.

Let's examine some children's literature related to animals and find out the rest of the story. Select the following stories to share with your students :

1. Aesop's Fables - "The Fox and the Crow"
   "The Fox and the Grapes"
2. "Reynard the Fox"
3. "The Gingerbread Man"
4. "The Musicians of Bremen"
5. "Little Red Riding Hood"

6. "Peter and the Wolf"
7. "Three Little Pigs"
8. "Who's Afraid of the Big Bad Wolf?"
9. "The Wold and the Three Kids"
10. "Little Miss Muffet"
11. "The Wizard of Oz"
12. "Bambi"
13. "Peter Pan"
14. "The Monkeys and the Crocodile"
15. "Three Billy Goats Gruff"
16. "Peter Rabbit"
17. "Goldilocks and the Three Bears"
18. Bible stories such as the Old Testament -
    "Jonah and the Whale"
    "Leviathon"
    "The Serpent and Eve"
    "David Saving his Sheep from a Lion and a Bear".

The first four stories relate to how the fox is portrayed in literature. Help the children select words to describe their perceptions. Perhaps they will come up with words like crafty, evil, sly, smart, cunning. In the "Musicians of Bremen", there are several versions. One version illustrates the "good guys" or the musicians as the rooster, the cat, the dog and the donkey. The "bad guys" are the fox, the wolf, the pig and the boar. Clearly there is anthropomorphism.

Ask the children to name several examples. More important, however, is the goodness or badness of the roles portrayed. Do the illustrations alone depict the animal in an unfavorable way ? Is the story emphasizing the idea that "big" means "bad" ? Ask the children to rewrite the story of their choice, depicting the animal in either a favorable role or one that is more closely related to the animal's real nature. This may encourage some students to do research into books for more information. Repeat these exercises with all of the stories.

Stories numbered 5-9 relate to the portrayal of the wolf in children's literature. Perhaps wolves are considered evil because of their habit of howling and hunting in packs. Certainly everyone feels sorry for an underdog. But wolves have been found to be an important "natural safety valve" on populations of deer, moose, rabbits and other small animals.

Exaggeration is often utilized in the stories for children. For example, examine "Peter and the Wolf" and "The Wolf and the Three Kids". What was the outcome of the duck in the former and the kid goats in the latter ? Are these animals usually eaten by wolves in the wild ? Are they found in the wilderness habitats of wolves ? Ask the children to rewrite one of these stories, switching the roles of the characters so that the bad are good and the good are bad. Ask them to illustrate their stories. Share the stories with other members of the class and discuss the importance of illustrations in conveying the impression of "goodness" or "badness".

The lion, "king of beasts", is usually depicted as displaying great courage, pride and ferocity. Yet, consider the natural history of the actual animal. The male lion is the original "male chauvinist pig" (how anthropomorphic). He lies around in Africa under the trees out of the sun awaiting the females of his pride or band to return from the hunt. He rarely hunts and usually never helps in the rearing of the cubs. Contrast the image that this information conveys with the impression given in the "Wizard of Oz".

Consider the crocodile. We have heard of Captain Hook's fate in Peter Pan. Yet, isn't it strange that such a voracious creature does not eat the Egyptian plover (a small bird) that regularly picks at the inside of the crocodile's mouth, removing unwanted particles ? The relationship with the crocodile is one of usefulness. The bird also warns the crocodile of approaching danger. The crocodile provides the bird with its food, found in the open mouth of the great lizard.

Many animals prey on rabbits and it's a blessing in disguise. Rabbits can live up to five years in the wild and a female rabbit can have up to eight litters in one season. That's a total of about 35 baby rabbits per female if a litter has between four and five, but up to nine young rabbits. A female rabbit can have a new set of young ones every month. That's a lot of rabbits.

Cartoons and speech expressions are filled with images of animals. Have you ever been called a "skunk" ? Maybe you were being called an insect-eater. Are you "blind as a bat" ? If so, then maybe you eat as many insects as they do. Can you think of other expressions ? Do they correspond to the real features of the animals ? Ask the students to illustrate the expressions.

Here are some other animals that are often maligned in our stories : jackals, crows, bears, cats, whales, spiders, dragonflies, weasels, skunks, vultures (buzzards).

Can you find more evidence in stories to support this theory ?

What usefulness can you find for these animals in the ecosystem ?

EXERCISE 10 : CULTURE AND ENVIRONMENTAL ETHICS

Concept : Cultures have different values and ways of relating to each other and the environment.

Goal : To introduce the learners to cultural values and behavior that exhibit positive social and environmental ethics.

Strategies: Inculcation, Confluent education.

Reference : Caduto, Michael J., Vermont Institute of Natural Science.

Materials : chalkboard or large paper to write greeting and the four lessons on, drum and striker, turtle rattle, cultural artifacts, one piece of string and four beads for each child.

Exercise :

1. Teach the learners the greeting : "Wescoweequosin Netop", a Narragansett Indian Word for "Welcome Friends".
2. Tell them this story of creation from the Abenaki Indians* :
   Many seasons ago, Tabaldak, the Owner or Creator of Earth, looked out over the land and all was silent. There were trees and willows, bushes, deer and rabbits, but everything was made of stone. The Earth was not warm and bright like it is today, but it was beautiful and enduring. But Tabaldak was not

---

* This exercise is about the Algonquian Indians of Eastern North America, a native Aboriginal people. The format can be adapted to the Aboriginal people in other countries, who are often positive role models for environmental and social values and behavior. A community-based Aboriginal Science program in Australia uses a combination of teaching through Aboriginal people with knowledge of the local mangrove environment, and European scientific methods [10].

This activity was developed by the author for the Vermont Institute of Natural Science, Woodstock, Vt. Printed here with permission.

pleased with his work for something was missing. So he touched every creature and brought them all to life. The rabbits ran in their dens and the deer leaped in the fields ; the plants grew tall and green.

Tabaldak then left the Earth for a long time, and when he returned he was amazed at what he found. The trees were so tall they were touching the clouds, the deer were as tall as a house and the rabbits as large as a full-grown man. There were so many animals that they were crowded in together and had eaten nearly all of the food. Many were starving.

So Tabaldak thought for a long time before he came up with a plan. He went to every living thing and touched it once again, giving it a size that it would never outgrow. And he made it so that everything would eventually grow old and one day die, to make room for new life.

Then Tabaldak created people. He first cut a man and a woman out of stone, but he did not like these. So he broke them up and carved new people out of a living ash tree and brought them to life. These became the ancestors of all people who have since lived.

The Indians saw the circle in all of nature, the sun and moon, the trees and rocks. And they knew that events in nature happened over and over again - the sun always rising and setting, the moon growing and shrinking. In order to remember the circles and cycles of nature, the Narragansetts have a Circle Dance.

3. Conduct the Circle Dance as follows :
Have the children form a circle, with everyone facing in the same direction (clockwise or counter-clockwise) and holding onto the shoulders of the person in front of them. Each dance step consists of two parts, stepping first on the toe and then lowering the heel so that the foot is flat on the ground. This step will be done with one foot and then the other. Meanwhile, the drum has a corresponding two-part beat during each footstep - a hard beat when the toe touches and a softer beat when the heel descends. The rattle, which will be shaken by another person, follows the drumbeat. Practise the steps and then lead the circle in one direction first, then in the other for a total of about five minutes.
4. Tell the children they will be going on an imaginary journey to an Abenaki settlement. Have them lie flat on their backs and close their eyes. Read the following story, playing the drumbeat where indicated whenever people are moving in the story. Play it especially fast during the hunting sequence.

* = begin the drumbeat
• = stop the drumbeat
** = beat the drum very quickly

Our journey begins in the pine woods.* As we walk, the wind sighs through the pine boughs and causes them to wave. Little patches of sunlight shine on the soft pine needles beneath our feet. A twig cracks underfoot. There is a clearing in the distance and a gentle curl of smoke rises into the sky. The smell of burning wood meets our noses as we approach. •

In the clearing are some long, white shelters made of birchbark wrapped around poles. There are holes in the roof for chimneys and smoke pours out of them. Many lodges are arranged in a big circle that is surrounded by a high log fence. We walk over to one house and feel the lines in the birchbark on its side. There is a pair of snowshoes leaning on the house.

*We turn and walk to the great fire-ring in the center of the camp, where a group of men and women are warming themselves by a blazing fire. •

The women wear their hair long, as do the men. Women are wearing leather skirts and leggings with mocassins attached. Blankets cover their heads and flow down over leather coats. Men wear small, skirt-shaped pieces of leather and leggings also. But on their heads are hood-like caps with two feathers sticking out of the tips. Bows and arrows are carried by the men, along with spears and knives that are laced to their belts.

*Soon the men leave the fire ring, carrying their weapons, and walk through the pine grove.

Some faint deer signs are found and two of the hunters begin to follow the trail very quietly. After a long, slow, tiring search, some animals are heard

chewing on the buds of small trees up ahead. The hunters creep closer and look through the branches of a low bush - the animals are deer ! And so we learn one of the lessons of survival in nature • - **SILENCE.**

In an instant several arrows are strung and sent whistling through the air. Only one deer is shot and it falls kicking on the ground, blood flowing from wounds in its side. One deer alone is taken because the others are needed to keep the herd alive for the long winter. A second lesson of survival in nature is learned • - **RESPECT - respect for other life besides people.

The men quickly skin the deer, cut it into pieces and lash these onto a pole which is carried between them on their shoulders. When they arrive into camp, much laughter and happy screams can be heard. "A successful hunt", cries a child, "we will have food".

But the deer is not kept by the hunters and their families, it is cut into smaller pieces and given to all those who need food. The final lesson is learned of how people can survive in the natural world and with one another - **SHARING** - sharing the gifts of nature.

SILENCE - RESPECT - SHARING - CIRCLES - these are lessons to be remembered each day. If we live by them we will be able to exist in peace and harmony with the earth, other people and all living things.

5. After the story is over, give the children a reflective moment to remain lying down and then have them sit up. Have them say the four lessons as a group.
6. Use the artifacts to teach about the local Aboriginal people. Emphasize what it would have been (would be) like to grow up as an Aboriginal. Ask the children whether or not they would have liked (would like) such an existence, and why.
7. Pass out the pre-cut pieces of string and four beads, one set to each child, asking them not to string the beads until you direct them to do so. When all children have their beads and string, place each bead onto the string as a group, repeating each of the four lessons with each bead : SILENCE, RESPECT, SHARING and CIRCLES. State that it is important to remember these lessons, and to live by them, if we are to live in a positive relationship with other people and the environment.

References :

1. Daniels, Thomas E. *Vermont Indians.* 1963. Journal Press, Inc., Poultney, Vermont.
2. Kelley, Lauren A. *A Teacher's Guide to Project Outreach : A Public Awareness Program in Vermont Archeology.* 1980. Masters Project.
3. Haviland, William A. Personal contact and author, along with Marjorie W. Powers, of : *The Original Vermonters, Native Inhabitants Past and Present.* 1981. University Press of New England. Hanover, New Hampshire.
4. Moody, John. Personal contact.
5. Sturtevant, William C. *Handbook of North American Indians.* Vol.15, 1981. Smithsonian Institute, Washington, D.C.

EXERCISE 11 : WORLD COMMUNITY

Concept : Children share certain basic rights with people everywhere.

Goals : To examine the rights of children, from the participants' own perspectives and in accordance with the United Nations Declaration on the Rights of the Child.

Strategies : Inculcation, Confluent education.

Reference [11] : Johnson and Benegar, pp.53-56.

Materials : Copies of Handouts A (What are the Rights of a Child) and B (U.N. Declaration on the Rights of a Child), scratch paper, display-sized copy of the Rules of Brainstorming.

Exercise :

1. Divide the group into pairs or teams of three or four participants. Give each group a copy of Handout A (What Are the Rights of a Child?) and some scratch paper. Explain that the first part of this activity will involve brainstorming their rights as children. (If the group is not familiar with the brainstorming technique, go over the rules and explain them. If the class has used the technique before, review the rules. Leave them posted where all participants can see them. For your convenience, the rules of brainstorming are listed below.)

RULES OF BRAINSTORMING

1. Saying anything that comes to mind is okay.
2. Discussing other people's statements is **not** okay.
3. Evaluating or criticizing other people's statements is **not** okay.
4. Repeating someone else's idea is okay.
5. "Piggybacking" on someone else's idea is okay - that is, it is okay to add something to or slightly change someone else's idea.
6. Silence is okay.
7. Even if you think you have finished, keep on going for a while.

2. Ask each group to appoint a member to record all the ideas offered. These should be listed on the scratch paper. To get the participants started, you might offer some examples of possible rights : the right to adequate nutrition, the right to fair treatment under the law, the right to have shelter, the right to a free education. Allow about ten minutes for the groups to brainstorm lists of possible rights.
3. After the groups have finished brainstorming, ask each group to choose a final list of ten rights that everyone (or almost everyone) agrees that all children in (your country) ought to have. These ten rights should be recorded on Handout A. Allow 15-20 minutes for the discussion and selection process.
4. Let the groups take turns reading their lists of rights. Record these on the chalkboard or newsprint sheets and tally any repetitions. Narrow these down to ten or fewer rights on which there seem to be general agreement.
5. Distribute a copy of Handout B to each group. Explain that this document was developed by the United Nations and that it lists the rights that all children should have, regardless of where they live or in what circumstances. Ask the participants to compare this list of rights with the lists they developed. Did they omit any important rights ? Did they list any rights that do not seem so important ?
6. Remind the participants that even though children all over the world may be morally entitled to these rights, in fact they do not always enjoy them. For example, children in many countries do not have adequate nutrition and medical care.

Discussion :

1. Which of the rights in the U.N. Declaration do most children in (your country) enjoy ?
2. How are these rights ensured ? What agencies and procedures in (your country) are involved with protecting the various rights of children ? How do they work ?
3. Which of these rights are the easiest to enforce ? Which ones are the most difficult to enforce ? Why ?
4. How are children's rights protected in your country and in other parts of the world ? If some of these rights are not being respected, what might be done

about it by individuals and organizations interested in protecting children's rights ?

Extending the activity :

1. Ask the group to search for and collect newspaper or magazine articles that describe how children's rights are being either respected or not yet fully protected in various parts of the world (including your country). Make a scrapbook or a bulletin-board display of these articles. If there is a large map of the world in the classroom, you might want to tack or tape the headlines of such articles of corresponding places on the map.
2. Suggest that participants make posters illustrating all or part of the U.N. Declaration on the Rights of the Child. This activity could be expanded to a schoolwide poster contest, with local artists and journalists acting as judges. Try to arrange to display the winning posters at a local library or business.
3. Ask the participants to write papers comparing the charter of your country, if any, with the U.N. Declaration on the Rights of the Child.

HANDOUT A
WHAT ARE THE RIGHTS OF A CHILD ?

1. _____
_____
2. _____
_____
3. _____
_____
4. _____
_____
5. _____
_____
6. _____
_____
7. _____
_____
8. _____
_____
9. _____
_____
10. _____
_____

HANDOUT B
U.N. DECLARATION ON THE RIGHTS OF THE CHILD

The right to affection, love and understanding.

The right to adequate nutrition and medical care.

The right to free education.

The right to full opportunity for play and recreation.

The right to a name and nationality.

The right to special care, if handicapped.

The right to be a useful member of society and to develop individual abilities.

The right to be brought up in a spirit of peace and universal brotherhood.

The right to enjoy these rights, regardless of race, color, sex, religion, national or social origin.

CHAPTER 6

ENVIRONMENTAL VALUES EDUCATION EXERCISES AT THE SECONDARY LEVEL - MORALLY AUTONOMOUS LEARNERS

The exercises found in this chapter are concerned with the following issues :

Issues	Page
1) controversial issues	71
2) value decisions and personal commitment	74
3) agricultural practices	75
4) transportation and energy	77
5) solid waste	79
6) resource management	80
7) agricultural practices	81
8) pollution	82
9) lifestyle and environment	85
10) inner life	88
11) social environment and justice	89
12) world community	89

The teacher will find ideas and procedures for conducting the exercises above according to various EVE strategies on the following pages of chapter 2 :

Strategies	Page
action learning	26
behavior modification	28
confluent education	27
inculcation	22
moral development	21
values analysis	23
values clarification	24

EXERCISE 1 : CONTROVERSIAL ISSUES

Concept : People who want to affect our values and behavior use powerful techniques of persuasion.

Goals : To expose learners to some common techniques of persuasion and to give them practice in identifying these in some statements about the desirability of using different kinds of energy.

Strategy : Confluent education.

Reference [1] : Adapted from Butterfield *et al.* (1982), pp.17-20.

Materials : Gameboard with Elements of Persuasion, Statements of Information Handout, Teacher's key for Statements of Information.

Exercise :

Each statement of information below uses a particular technique (or techniques) of persuasion to make its point. You are to match each statement with a square on the gameboard chart. Here's how you do it :

1. You will see that the gameboard chart is divided into a **pro** side and a **con** side.
2. Decide first if the statement is a **pro** (for nuclear power) statement or a **con** (against nuclear power) statement. Once you have decided this you will know which side of the chart to use.
3. On the gameboard, there is a key which includes four boxes. Each box has a design which represents one of four techniques of persuasion (attention, confidence, desire, urgency). Try to determine which techniques of persuasion are used in the statement.
4. Write the number of the statement in one of the boxes on the side of the chart which you chose earlier (pro or con). The box should have the design which matches the key.

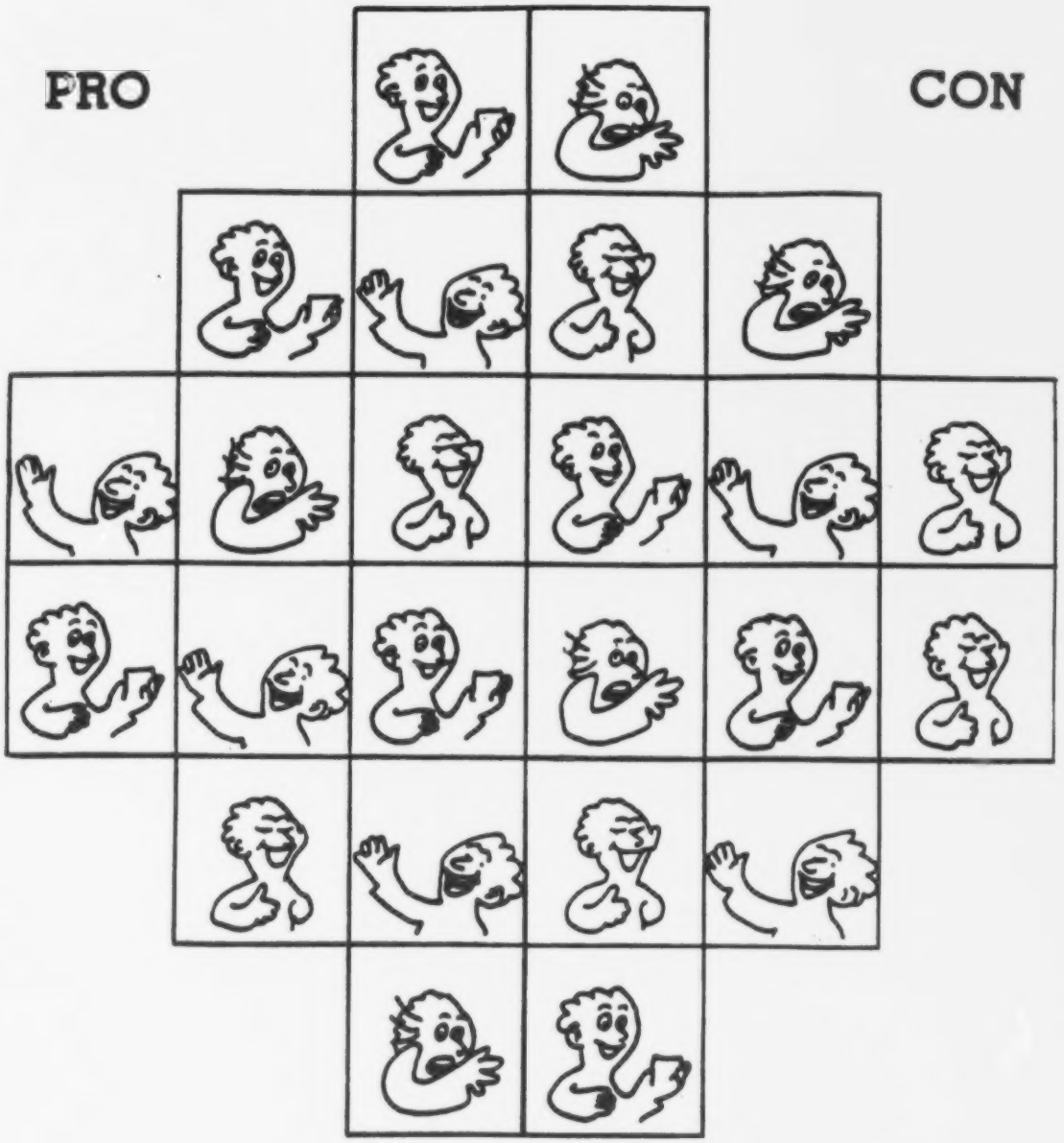
Statements of Information

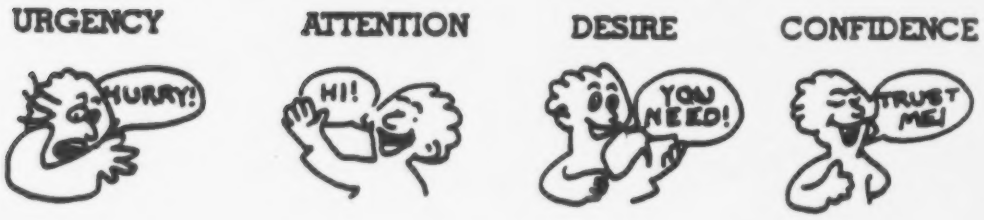
1. Solar is all right, but nukes do it all night.
2. Safe energy : the answer is blowing in the wind.
3. Plutonium is forever.
4. Electric power is without doubt the most pollution-free major source of energy available now or in the future.
5. The nuclear clock is at five minutes to midnight.
6. Let's face it. We can live without nuclear power.
7. Happiness is a day without nuclear power.
8. Come play in the nuclear power plant park.
9. Stop nuclear power before it stops you.
10. Pull the plug on foreign oil.
11. Spent Fuel Accident Devastating : Can Millions be Evacuated ?
12. A nuclear power plant can save our nation 10 million barrels of oil per year and can produce more than 7 billion kilowatt hours of electricity.
13. The really nasty thing about radiation is that you can't see it or feel it or hear it or smell it or taste it or tell it to go away.
14. In two decades of commercial nuclear power generation, there has been no injury to any member of the public.
15. Remember Three Mile Island !
16. The soft energy path will lead us to a pollution-free society with beautiful, small communities throughout the nation.
17. Our music band performs benefit concerts for nuclear power.
18. All those anti-nuclear activists are alike. They want to stop progress ; they want to stop our nation's economy.

Teacher's Key for Statements of Information

1. Attention (slogan)
2. Attention (slogan)
3. Urgency, Attention (slogan, numbers)
4. Confidence

PERSUASION


PRO
CON


URGENCY
HURRY!
ATTENTION
HI!
DESIRE
YOU NEED!
CONFIDENCE
TRUST ME!

5. Urgency (numbers)
6. Confidence (camaraderie)
7. Attention (slogan, numbers)
8. Attention (slogan, confidence)
9. Urgency (exaggeration)
10. Urgency, Attention (slogan)
11. Attention, Urgency (numbers, exaggeration)
12. Desire, Confidence (numbers)
13. Urgency, Attention (sensory images)
14. Confidence (exaggeration)
15. Attention (slogan)
16. Desire (sensory images)
17. Confidence (recognition)
18. Desire, Confidence (prejudice)

Other project ideas :

The following list includes other ideas which you might wish to develop as part of a unit on techniques of persuasion.

1. Collect newspaper articles about nuclear power. Have students analyze bias, propaganda, ideology and techniques of persuasion.
2. Stage a debate with people from your community who represent different positions on the nuclear power controversy.
3. Have students design their own advertisements which are either favorable or critical towards nuclear power.
4. Have students design a symbol reflecting their attitude about nuclear power.
5. Apply a similar approach to different controversial issues and problems characterizing the environment of our contemporary world (peace, human rights, underdevelopment, poverty, etc.).

EXERCISE 2 : VALUE DECISIONS AND PERSONAL COMMITMENT

Concept : Living according to our values bears commitment and personal sacrifice.

Goals : To help learners to examine their own values, and those of their classmates, by struggling with a moral dilemma.

Strategy : Moral development (moral dilemma).

Reference [2] : Butterfield (1983), pp.35-36.

Exercise :

Bill, a college student, works in the laboratory of Dr. J. at a large university. His job is to identify viruses used in Dr. J's research. The tests have been routine until recently. Now Bill thinks he has detected a different virus - one that the National Institute of Health (NIH) guidelines say is too hazardous to use in work. Bill has repeated his tests and he is certain now that Dr. J's cells contain the prohibited virus.

Bill is worried about what he should do. He was invited to work in Dr. J's laboratory and considers it a great privilege to be there. Bill's own college program depends on his continuing work in the laboratory. He knows that it is a serious thing for a researcher like Dr. J. to break NIH rules. He does not want to think Dr. J. is doing anything wrong.

Other students Bill talks to give him contradictory advice. Hilary points out that the virus could be contamination that showed up by accident. Dr. J. should be told about the virus, Hilary says. Jake says he has heard rumors that Dr. J. is using the prohibited virus. He says other researchers in the university know about it, and Jake advises Bill to blow the whistle on Dr. J. by telling the Institutional Biosafety Committee at the university what he has found. Jake says that if Bill doesn't, and the committee finds out that he knew all along that Dr. J. was doing illegal research, Bill's own career as a scientist will be ruined.

The virus is prohibited by NIH because if the cells escape and accidentally infect a person, sickness may result. The illness is mild, however, and there is some speculation that the NIH regulations will soon be lifted as far as this virus is concerned. In a few months, work with this virus may be legal.

If Bill is wrong and accuses Dr. J. of something he isn't doing, Bill will most likely lose his job and scholarship. If the virus is only contamination, as Hilary says, then Dr. J. should be informed right away so he can report the accident to NIH. If Dr. J. is actually using an illegal virus in his research, Bill expects him to deny the accusation and claim it is contamination.

What should Bill do ?

(To the teacher)

A technique for handling moral dilemmas appears in chapter 2, page 21.

In the case on which this moral dilemma is based, graduate students reported their suspicions to the head of the department. Their action set in motion investigations by the Institutional Biosafety Committee and NIH. The researcher was found to be in violation of guidelines and resigned from the university, according to *Science News* (March 28, 1981); p.198.

EXERCISE 3 : AGRICULTURAL PRACTICES

Concept : There are costs and benefits involved in both traditional agricultural practices and the modern technological farming of the Green Revolution.

Goals : To introduce the Green Revolution as a catalyst for fostering a better understanding of the state of food production and distribution today, and the impact of agricultural practices on the total human environment.

Strategies : Values clarification, Moral development (moral dilemma).

Reference [3] : Butterfield (1983), pp.214-216.

Materials : Worksheet - "I'd Prefer to Live in a Country Where".

Exercise :

In the 1950s, agricultural experts from around the world began the Green Revolution. By sending technical help to the farmers of the developing, overpopulated countries, the experts hoped to assist the farmers in growing more and better food crops. Geneticists developed climate-adjusted strains of wheat, corn and rice that would yield large amounts of nutritious grain. Engineers built tractors and harvesting machines that could cut labor and save grain. Chemists made fertilizers that turned poor farmland into good cropland. Irrigation systems were installed to expand growing space in desert countries.

Between 1950 and 1970, wheat production rose from 270,000 metric tons per year to 2.35 million. Corn production increased 250 percent. India alone increased

grain production 2.8 percent a year, while the population of that country increased 2.1 percent a year*.

But all is not rosy in the Green Revolution. In another country of the Asian region, food-producing acreage jumped from 50,000 to 32 million acres in less than ten years. To work that much land requires a huge investment in machinery. The machines are made abroad and the country practising the Green Revolution has become totally dependent on foreign countries for tractors as well as for harvesting and milling equipment. Machines take the place of people. The farm-labor force in certain agricultural regions has dropped 50 percent in the 1970s, and in Latin America 2.5 million farm workers lost their jobs in just one year**.

The seeds, machines and fertilizers are not given to the developing countries free of charge. The Green Revolution puts a great strain on the economies of these countries.

Are they spending their limited resources in the best way ?

Place a check mark next to the option that suits you best in each of the following cases. The class will discuss these statements afterward.

I'D PREFER TO LIVE IN A COUNTRY WHERE...

	A.		B.
1.	[ ] everyone who wants to can work at producing the food the nation needs.	1.	[ ] farm workers are replaced by machines that could help produce abundant food.
2.	[ ] food is limited to whatever the natural soil conditions will allow.	2.	[ ] food is abundant because of the heavy use of commercial fertilizers.
3.	[ ] the government urges farmers to grow food crops for use within the country even though that means there will be fewer nonfood crops for export.	3.	[ ] the government urges farmers to grow nonfood items such as coffee or tea for export, even though that means less food will be grown for local consumption.
4.	[ ] the food is raised by farmers using traditional equipment and methods even though that means a small yield and less variety.	4.	[ ] the food is raised on large farms using advanced equipment that must be purchased from more highly industrialized nations.
5.	[ ] food is limited to types the people are familiar with and know how to store and prepare even though the food is less nutritious.	5.	[ ] new varieties of nutritious food are introduced even though the people don't like the food but are forced to use it or go without.
6.	[ ] food is grown locally and limited to what can be distributed by traditional means even though some people in remote regions may go without food at times.	6.	[ ] the limited government money is spent on building roads and bridges to the farthest regions of the country even though that means using up agricultural land to build roads and shifting money away from agriculture.

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* Curtis, Helena. *Biology*. 1979. Worth Pub., Inc., New York, p.968.

** Barnet, Richard. "The Profits of Hunger", *The Nation*, February 9, 1980, p.129.

7. [ ] food is limited to a few highly nutritious types even though the limited variety puts a strain on the soil ecology (by always using the same minerals).

8. [ ] food is grown in abundance even though the farmers must rely on heavy applications of pesticides.

9. [ ] food is abundant due to strict government control of family size.

7. [ ] a wide variety of food is grown even though that means that some nutritious types (wheat) must compete for space with low-nutrition foods (sugar).

8. [ ] food is limited to types adapted to the insects, worms, bacteria and viruses that are normally found in that country.

9. [ ] food is limited, but the people are free to have large families if they want them.

(To the teacher)

Ask students to decide for themselves if their responses put them in the group favoring the continuation of the Green Revolution or in the group opposing the continuation of the revolution. (Responses 1b, 2b, 4b, 5b, 6b, 7a and 8a are generally in line with support for the Green Revolution.)

Now ask those in favor of the revolution to propose a solution to this situation : the Green Revolution is machine intensive, not labor intensive. Most developing nations have an abundance of workers but little capital to spend on machines. Because of the high cost of oil, nearly every country "revolutionized" by the Green Revolution is today importing food*.

Ask those opposed to the Green Revolution to propose a solution to this situation : of the world's 4.5 billion people, at least 1 billion, that is 22 percent, are inadequately nourished. About one-third of the deaths that occur throughout the world are due to the effects of malnutrition**.

EXERCISE 4 : TRANSPORTATION AND ENERGY

Concept : "Simple" forms of transportation may provide several benefits.

Goal : To compare a car's energy performance with a bicyclist's energy performance.

Strategies : Valuesanalysis, Confluent education.

Reference [4] : Wahl, pp.100-101.

Materials : Worksheets.

Exercise : Ask your students to complete the Worksheet.

Discussion : In small groups or in writing :

1. Compare the answers to questions 2 and 3 on the Worksheet. Draw a conclusion about riding bicycles.

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* *Time*, October 19, 1981, p.80.
** Curtis, Helena, *op. cit.*, p.968.

2. With this conclusion in mind, what environmental benefits might there be in shifting from automobiles to bicycles for most short distance transportation ?
3. What transportation choices can you, as an individual, make to help save energy ?

Extending the activity :

Investigate bicycle use in other countries, including some where daily use is extensive, and compare it to bicycle use in (your country). Draw conclusions about the benefits gained from bicycle use, and discuss what (your country) might learn from other countries.

Worksheet

Cars use gasoline and people on bikes use food to get the energy to move. Before we can compare a car's performance with a bicyclist's performance, we have to talk about how energy is measured.

ENERGY is usually measured in terms of how much HEAT it will make. We will have to spend some time now learning about units of energy.

The calorie and the joule are two small units of energy.

1 joule = .24 calorie

Which is bigger, a joule or a calorie ? _____

About how many joules are there in a calorie ? _____

There are large Calories (with a capital C)

1 Calorie = 1,000 calories = 4184 joules

A farmer might use up to 4,000 Cal in a hard day's work. How many joules of energy would the farmer use up on such a working day ? _____

Now, a person who uses up 746 joules every second is working very hard, whereas one who uses up 746 joules in an hour is barely moving. So...TIME has to be taken into account when we spend energy.

a joule-per-second is a watt
746 watts = 1 horsepower

How many watts is 11 horsepower ? _____

How many Calories per second is a horsepower ? _____

(Hint : Give an approximate fraction.)

Calculate the following :

1. A glass of whole cow's milk contains 660 calories of energy. How many joules is that ? _____

   If a bicyclist burns up 373 joules per second (i.e. 373 watts or $\frac{1}{2}$ horsepower), how long will a glass of milk allow him or her to pedal ? _____

2. According to one calculation, a person on a bicycle uses 12.6 calories to travel 1 kilometer (assuming bike + rider = 84 kg.). If the cyclist goes 24 km/hr (a comfortable speed) it takes how long to go 1 kilometer ?

_____ min. or _____ sec. Thus, our bicyclist uses 12.6 calories or _____ joules in _____ sec. This is _____ joules-per-second, i.e. _____ watts. Our bicyclist, therefore, is using energy about like burning a _____ watt light bulb.

3. A car, on the other hand, uses 1500 calories to travel 1 kilometer. Assume a speed of 48 km/hr. How long to 1 kilometer ? _____ min. or _____ sec. The car uses 1500 calories or _____ joules in _____ sec. This is _____ joules-per-second, i.e. _____ watts. Our car is burning _____ 200-watt light bulbs.

EXERCISE 5 : SOLID WASTE

Concept : The advantages of recycling paper can be quantified in several ways.

Goals : To help learners gain some direct idea of use of at least one resource in the community and its economic and land use implications. To give learners an opportunity to exercise basic math skills.

Strategy : Confluent education.

Reference [5] : Roth and Lockwood, pp.103-104.

Materials : Fact sheets - which should contain the following statements :

1. There are 52 weeks in the year.
2. It takes about 30 years for a pine seedling to reach pulpwood size in prime pulpwood country.
3. One acre of land can grow about 500 trees.
4. The (name of your local newspaper) generally weighs about _____ ounces. Its Sunday edition weights _____ ounces.
5. It takes about 17 trees to make one ton of newsprint.
6. The current price for recycled paper in our area is _____ per pound.

Exercise :

1. Count the newspapers used in the home for one week. Using the weight of an average newspaper, determine the weight of the newspapers each family uses in a year.
2. Have the group share their findings and determine how much newspaper is used by all the families of the group in a year. What is the average use per family per year ?
3. Multiply the figure found in the last question by the number of families in your town (see Town Report or inquire of local officials) to determine approximate newspaper consumption in the town or city.
4. Using the information gathered and the fact sheet, work out answers to the following questions :

   . Approximately how many trees were used by the group's families to meet their newspaper demand this year ?
   . How many for the town or city's needs ?
   . How many acres does it take to grow the trees needed for these newspapers ?
   . How long did it take to grow them ?
   . How long before there will be replacements for these trees ?

5. Have the learners list what happens to old newspapers in their homes. What happens to the bulk of papers ?

. If all the used newspapers were collected for recycling, how much would it be worth ?
. How would this affect the amount of land needed for producing paper pulp ?

6. Find out who in your community recycles old newspaper. Interview the people in charge. How much paper do they collect each year ? Based on your figures, what percent of local paper gets recycled ? Can you figure ways to get more people to recycle their newspapers ? If more people recycle their paper, what happens to the price per pound (or ton) that the recycler will receive ?

Discussion :

1. According to the conclusions drawn from the information provided on the fact sheets, is recycling economically efficient ? Should it be promoted on this basis ?
2. For what other reasons might recycling be promoted ?
3. How might increased recycling affect the world economy.? The world environment ?

EXERCISE 6 : RESOURCE MANAGEMENT

Concept : Management of the ocean's resources is complex, involving many value-laden issues and perspectives of many nations.

Goal : To examine the issues involved in managing the sea and its resources.

Strategy : Moral development (moral dilemma)

Reference [6] : Adapted from Unesco, Strategic Environmental Planning, Report No.38.

Exercise :

1. The United Nations Conference on the Law of the Sea is attempting to formulate conventions on exploitation of the oceans and their resources. No convention has yet been acceptable to the nations meeting at the conferences. Meanwhile, some countries are unilaterally claiming rights to the sea and seafloor up to 200 miles from the coast.
   In class, hold a bargaining session between "countries" having an interest in owning or sharing the sea and its resources. Divide the class into sections representing countries. One country should be inland, with no borders on the ocean, but with a definite interest in mining the seabed for manganese nodules and drilling for oil ; another country's coastline should be within 200 miles of yet another country, situated on an island. Try to reach an agreement on ownership or sharing of the sea and its resources.

2. A country has been conducting an island watch in the western area of the Pacific Ocean in the hope of being the first country to spot the birth of an island. If it is the first to spot such an island, the country would claim territorial rights to the island and up to 200 miles of ocean and sea floor off the island's coast.
   Let's say the country claims a new island and proceeds to claim also the sea's resources for 200 miles around the island. In ten days, the island erodes and disappears. Should the country continue to lay claim to the area around the former island ?

NOTE : For information on the Law of the Sea Conference, write to :

Director,
Office of Public Information,
United Nations, NY 10017, USA.

EXERCISE 7 : AGRICULTURAL PRACTICES

Concepts : Factory fertilizer is a stronger kind of fertilizer than natural fertilizers, but has additional environmental consequences.

Goal : To compare the impacts on the environment of natural and factory-made fertilizers.

Strategy : Confluent education.

Reference [7] : Adapted from Parker *et al.*, pp.84-85.

Materials : (Mr. Moyo and Mr. Gumisa.)

Exercise :

1. In small groups, distribute copies of the handout and answer the question posed.

Discussion :

In small groups or as a class :

1. Based on the experience and knowledge of advanced agricultural sciences and technology, what information might a team of agricultural experts be able to offer the Zimbabwe farmers regarding the use of chemical fertilizers ?
2. What are some of the environmental impacts of both natural and chemical fertilizers ? Which are the more damaging to the environment ?
3. When can the trade-offs between efficiency and environmental effects of factory-made fertilizers be considered significant ?
4. How do these issues apply to your own homes ? What do your findings say about the use of fertilizers on your gardens at home ? On your lawns ? Is it wise to use chemical fertilizers to keep your lawn green ?

Mr. Moyo and Mr. Gumisa are farmers at Gutu in Zimbabwe. Their farms are side by side.

Mr. Moyo is complaining to his friend about his maize plants. They have not grown as well as Mr. Gumisa's maize plants. Yet, rainfall was the same. It is not as though the weather conditions on the two farms were different.

Mr. Moyo says he ploughed his land just as did Mr. Gumisa.

Mr. Moyo says he decided to use only natural fertilizer on his land. He collected all the cattle manure from their kraal and mixed it with soil from an anthill and compost from his compost heap. "It was hard work, too," says Mr. Moyo. Mr. Gumisa knows that was a good idea, for indeed, natural fertilizer is very good for soil. He wonders, though, if Mr. Moyo had **enough** natural fertilizer for his five hectares of maize. He knows that if one uses natural fertilizer then a great deal is needed.

The two farmers each have five cattle. Mr. Gumisa used the manure from his cattle and compost for fertilizing his wife's vegetables and the groundnuts she was growing. For his five hectares of maize he bought synthetic fertilizer.

Finally, Mr. Gumisa decided he must invite Mr. Moyo, whom he liked so much, to his home and give him some beer. He would then try to explain to him why buying factory-made fertilizer has many advantages.

What did Mr. Gumisa say to his friend ?

What was Mr. Moyo's response ?

EXERCISE 8 : POLLUTION

Concepts : Environmental problems often have international repercussions. Pollution has both ecologic and economic costs.

Goals : To provide learners with a thorough knowledge of the acid rain issue. To help learners to better understand some of the economic issues involved with solving the acid rain problem.

Strategy : Values clarification.

Reference : Butterfield (1983), pp.250-253.

Materials : Acid rain background information, list of how each segment of society pays for acid rain and chart "Closing the Circle on Acid Rain".

Exercise : (to the student)

Rain picks up chemical compounds as it falls through the air. If the chemicals are of a certain type, they will cause the rain to form acid. Some of these acid-rain substances are sulfur oxides and nitrogen oxides which come from automobiles. Iron smelters and coal-burning electric power plants release sulfur oxides through their stacks. Heating oil burned in home and indusrtrial furnaces releases nitrogen oxides. Some industries produce waste compounds such as hydrogen chloride that combine with rain to form acid.

Acid rain makes lakes and soil acid. Acid in lakes can cause female fish and salamanders to lose their ability to release eggs. It can cause spinal damage in some fish. Acid water makes it possible for mercury to enter the tissues of fish, and the mercury damages their livers and brains.

Algae, important oxygen producers in lakes, die when the acid content of water reaches certain levels. The bacteria that decompose materials on the lake bottom are also killed by acid in the water. As fish, algae and bacteria die, the ecological balance of the lake is upset.

When acid rain soaks into soil, it causes minerals to dissolve and wash away (leach). As a result, plants die of mineral deficiency. Normally, plants cannot absorb lead and mercury, but acid rain dissolves these substances so that they can be taken up by plants. The plants are damaged or die. Acid rain has produced leaf damage in tomato, kidney bean, soybean and sunflower plants. The acid slows the growth of trees such as poplar and birch, and pine and spruce are damaged by acid rain. Bacteria, just as important in recycling materials in the soil as in lakes, are killed by soil water that is acidic.

In addition to damage done to living systems, acid rain can dissolve certain building materials such as marble and limestone and the mortar used to cement bricks together. It corrodes alloys that contain iron.

In a large part of North America and in many European countries, acid rain is increasing each year. The Environmental Protect Agency (EPA) of the USA estimates that there will be a 50 percent increase in nitrogen oxide pollutants by the year 2000, which means that the acid in rain and snow will steadily increase well into the next century.

What can or should be done about this kind of pollution ? The problem would disappear if we stopped burning coal in furnaces and oil products in vehicles. Until that day comes, someone has to pay for the damage done by acid rain to fish, crops, forests and structures.

Some suggestions for paying the acid-rain bill are described below*. When you have read them over, fill in the circle graph on page 84 to show the percentage of cost (10%, 25%, 50%, etc.) you think should be assigned to various agencies and groups. Later, the class will make a compromise graph. You should be ready to explain your own graph.

1. **Industry prevents.** Industries, including automobile manufacturers, build plants and products with devices in them to prevent the pollution of air by sulfur and nitrogen oxides. This will, of course, raise the cost of many items, including vehicles, and the rule can only apply to new plants and newly manufactured products.

2. **Government prevents.** The government sets the standards that fuels must meet so that fumes and exhaust do not contain substances that can produce acid rain. This will cause industry to switch to other sources of energy such as nuclear power, and automobiles will have to run on so-far-undeveloped energy sources such as hydrogen or solar. Switching to new sources of energy will be costly and will take several years.

3. **Industry pays.** Any industry that is found guitly of polluting the atmosphere with acid-forming substances pays a fine to the localities where the acid has done damage. This money is used to correct the damage. Since it will take court proceedings to prove guilt, it will be a long time between pollution and correction.

4. **Industry pays to pollute.** The government sells a limited number of "rights" to pollute up to a standard level. Industries willing to afford the "rights" purchase them, but when all the "rights" have been sold, no more are issued. The number sold would be low enough to assure that the atmosphere would not be polluted in a serious way. Several companies could join to buy the "rights" so long as their combined pollution was not greater than the standard set. This means that some manufactured goods would be scarce and expensive because fewer companies would be making them.

5. **Government pays.** A superfund from taxes is established and localities that have serious acid-rain damage can use these funds to correct the damage. This means that everyone pays something for acid-rain damage whether they contri-

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* Suggested in part by Armin Rosencranz, "Economic Approaches to Air Pollution", *Environment*, October, 1981, pp.25-30.

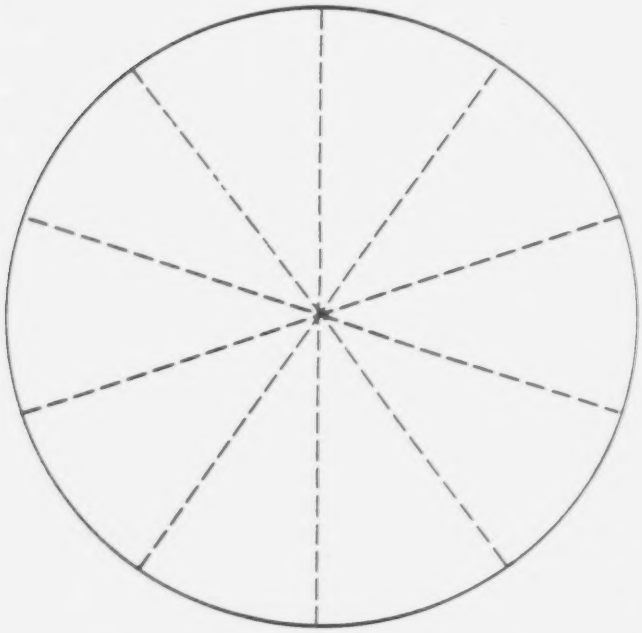
buted to the damage or not. Since only certain localities have acid-rain problems, those localities would benefit from the superfund more than others.

6. **Consumer pays.** When the consumer buys electricity, oil and oil products, appliances, a car, or certain materials such as plastics made from oil or coal, he or she pays a surcharge. This is then passed on to the government to be used in cleaning up acid-rain damage caused by manufacturing or using those items. This means that if the consumer cannot afford the surcharge, he or she will have to go without the convenience or find a substitute.

7. **User pays.** Since a major result of acid rain is damage to fish populations, forests and crops, people who fish, lumber and pulp companies and farmers pay to have acid-rain damage corrected. This means that whoever derives a profit or pleasure from using the things damaged by acid rain pays for the privilege. This would raise the cost of certain types of recreation and the cost to the consumer of commodities such as food, lumber and paper.

8. **Other.** Use any amount of your graph for the percentage you would assign to some way of paying for acid-rain damage that is different from, or perhaps a combination of, those suggested.

CLOSING THE CIRCLE ON ACID RAIN



Share of Cost for Acid-Rain Damage

(10% markers have been placed on the graph to guide you in filling in the shares you decide to assign.)

(To the teacher)

The background information for this activity may be somewhat long and difficult for some readers. You can, of course, read and/or talk about the causes and effects of acid rain prior to inviting class participation in the activity.

An important part of the activity is the discussion that goes on when you ask the class to consolidate their opinions into one graph representing a consensus of the class. Project the circle graph outline or draw it on the board to aid class discussion.

In some classes, it may be appropriate to describe the information of acid rain in more detail. Some of the reactions involved are represented by the equations given below.

$2\ SO_2 + O_2 \rightarrow 2\ SO_3$

sulfur dioxide — sulfur trioxide

$SO_3 + H_2O \rightarrow H_2SO_4$

water vapor in air — sulfuric acid

$2\ NO + O_2 \rightarrow 2\ NO_2$

nitrogen monoxide — nitrogen dioxide

$2\ NO_2 + H_2O \rightarrow HNO_3 + HNO_2$

water vapor in air — nitric acid — nitrous acid

EXERCISE 9 : LIFESTYLE AND ENVIRONMENT

Concept : As the gap between rich and poor widens, the world is polarizing along economic lines into two camps.

In effect, our world today is in reality two worlds, one rich, one poor ; one literate, one largely illiterate ; one industrial and urban, one agrarian and rural ; one overfed and overweight, one hungry and malnourished ; one affluent and consumption-oriented, one poverty-stricken and survival-oriented*.

Goal : To examine the growing gap between economically rich and poor countries.

Strategy : Confluent education.

Reference [9] : Adapted from Millar, pp.22-24.

Materials : One large copy of The Development Gap Chart ; copies of Living on Less than Two Hundred Dollars a Year and of the Parable for each student.

Exercise :

1. See if anyone in the group can describe from something they have observed or experienced here or in another country, what it is like to be really poor. Display the Development Gap Chart for participants to examine.
2. Discuss the Development Gap Chart. The following questions can start discussion :

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* Lester R. Brown, *World Without Borders*, 1972. Random House, New York, p.41.

a. What are the differences in per capita GNP between developing and developed countries ? What does this mean in practical terms of personal and home life ?
b. Note the statistics on life expectancy, infant mortality, and people per physician. What do they tell you about health conditions in developing countries ?

3. Read Heilbroner's description of life in a developing country, "Living on Less than $200 a Year". Ask participants if they feel any responsibility to help people who are living under such conditions.
4. Read the parable. (A parable is a short, simple story from which a moral lesson may be drawn.)
5. Discuss the parable, using the following questions as a basis for discussion :
   a. What is the meaning of the parable ?
   b. What values does the parable bring out ?
   c. What does this parable have to say about setting priorities ?
   d. Who are The Brothers ? The Others ?
   e. According to the parable, what are the consequences of the Brothers' actions ?
   f. What implications does it have for global development ?

THE DEVELOPMENT GAP

INDICATOR	DEVELOPING COUNTRIES	DEVELOPED COUNTRIES
Per Capita GNP	$230	$3,085
Population (millions, mid-1971)	1,850	664
Population Growth Rate	2.6%	1.1%
Literacy	40%	97%
Calorie Consumption	2,180/day	3,030/day
Life Expectancy	52 years	71 years
Infant Mortality (deaths per thousand live births)	110	22
People per Physician	3,400	700
Per Capita Power Consumption (annual KWH output per person)	220	5,140

Source : U.S. Agency for International Development, "Development and Humanitarian Assistance, FY 1973 Program Presentation to the Congress", p.B-1 ; and U.S. Agency for International Development, "Selected Economic Data for the Less Developed Countries", June 1972, p.8. Reprinted from *The United States and the Developing World : Agenda for Action* (Washington, D.C., Overseas Development Council, 1973), p.123.

LIVING ON LESS THAN TWO HUNDRED DOLLARS A YEAR*

In his book, *The Great Ascent*, Robert Heilbroner uses a simple but most effective technique for conveying the idea of just what it means to live on from $50 to $200 per year. He starts with a typical Canadian-American family, with an income of $6000-$7000 per year, in a small suburban home. Then he refashions this home, and the life of its inhabitants, into a typical scene in the vast "under-$200" areas of the world :

1. Take out the furniture, except a few old blankets, a kitchen table and one chair.
2. Take away all the clothing, except for the oldest dress or suit for each member of the family, and a shirt or blouse. Leave one pair of shoes for the head of the family.
3. Empty the pantry and refrigerator except for a small bag of flour, some sugar and salt, a few moldy potatoes for tonight's dinner, a handful of onions and a dish of dried beans.
4. Dismantle the bathroom, shut off the water, remove the electric wiring.
5. Take away the house itself, and move the family into a toolshed.
6. Remove all the other houses in the neighborhood and set up in this place a shanty-town.
7. Cancel all subscriptions to newspapers, magazines and book clubs. This is no great loss, as our family is now illiterate.
8. Leave one small radio for the whole shanty-town.
9. Move the nearest clinic or hospital 10 miles away and put a midwife in charge instead of a doctor.
10. Throw out the bankbooks, stock certificates, pension plans and insurance policies, and leave the family a cash hoard of $5.
11. Give the head of the family 3 tenant acres to cultivate. On this he can raise $300 in cash crops, of which one-third will go to the landlord and one-tenth to the local moneylender.
12. Lop off 25 to 30 years in life expectancy.

PARABLE**

There once was a man who had a rich property. He gave it to his children to care for. Because the father loved his children, he left on a long journey and gave them real freedom to organize his property their own way.

Now part of that property was cultivated and another part was not. The sons who lived on the richer part built fences to defend their section from the others who lived on the wild parts. They led a good life themselves, and once in a while threw food over the fence so that the other children at least knew life could be good.

Then the children on the other side of the fence sent a delegation to their brothers and said : "Teach us how to cultivate our soil, and while we learn, share your riches with us so that we do not die." But the Brothers replied, "Go away ; there is not enough for all of us. Learn to till the soil yourselves."

The Others : "We will do that, but we have no tools to till the soil. Help us with your tools."

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* Reprinted from FAO Magazine *Freedom From Hunger*, July-August 1965.

** Adapted from a parable which appeared in the Fall 1970 edition of "Ways and Means of Teaching about World Order", a publication of the Institute for World Order, 11 West 42nd Street, New York, New York 10036. The original parable was contributed by Kin Mason of Mount Elizabeth Secondary School, Kitimat, British Columbia.

The Brothers : "We cannot do that, because we need all we have if we want to keep our standard of living. We'll give you a few tools, and with them you can make your own."

The Others : "In order to make tools we need money. Buy what we have reaped on our land and we shall buy our own tools from you."

The Brothers : "But we don't need products. If you sell them to us our economy will be disrupted."

The Others : "But then what shall we do ? Our wives and our children are dying."

The Brothers : "It will take time."

The Others, seeing that their brothers did not really want to help them, stormed the fence, broke it down, took the food they needed, and beat the brothers who resisted them.

Then the owner of the property returned and was both angry and sad.

EXERCISE 10 : INNER LIFE

Concept : Quiet space in a natural area is a preferable setting for many people in which to conduct serious, personal reflection.

Goals : To get learners thinking about the kind of environment they prefer in which to think of important matters. To help learners to consider their opinions on whether the government has a duty to provide quiet places for people to do their thinking.

Strategy : Values clarification.

Reference [10] : Butterfield (1983), pp.274-275.

Materials : Thinking Person's Inventory.

Exercise : (to the student)

Assume for the moment that you need to think about something that is important to you. Answer these questions about the circumstances that would help you to think through your ideas.

1. Do you prefer to have someone nearby while you think ?
2. Do you prefer to listen to music or other human sounds while you think ?
3. Do you prefer to be active while you think (walk, jog, bike, dance, etc.) ?
4. Do you prefer to be indoors or outdoors while you think ?
5. Do you prefer to be in the country or in the city while you think ?
6. If you could be anywhere outdoors, what are some of the conditions and surroundings that would be good for your thinking ?
7. If you could be anywhere indoors, what are some of the conditions and surroundings that would be good for your thinking ?
8. Would it help you to think if you had something to look at ? If so, what would it be ?
9. Could you think better if you were talking to others ?
10. Could you think better if you wrote out your thoughts ?

(To the teacher)

You can follow up this exercise by asking these questions of the class :

1. Many people find that they need a quiet place outdoors in which to do their serious thinking. Do you believe that all countries should provide suitable places where people can think outdoors ?

2. Some of our national parks are located in or near large cities in order to make quiet, noncommercial, natural areas available to city residents. Now the concerned Ministry is considering a proposal to turn these parks over to the cities to maintain. What advantages and disadvantages can you see in this proposal ?

EXERCISE 11 : SOCIAL ENVIRONMENT AND JUSTICE

Concept : An essential part of an environmental ethic is a human ethic based on social justice for all individuals and groups.

Goal : To direct learners in assessing the living conditions within the local community, and to weigh these situations in terms of social justice issues.

Strategies : Action learning, Confluent education.

Reference [11] : Adapted from Stapp and Cox (1979), pp.385-386.

Materials : newspapers and magazines, poster board, chart paper and markers, etc.

Exercise :

1. Take students for a walk through the neighborhood surrounding the school. Have the students :
   a. identify the population makeup of the community (e.g. all mon-culture, multi-culture, or pockets, of mon-culture, multi-cultures, etc.) ;
   b. identify the types of housing in the community (e.g. single dwellings, duplexes, apartments) ;
   c. note the number of people on the streets ; look for signs of children (e.g. toys, bikes, etc.) ;
   d. note the number of cars (moving, parked or abandoned), found on the streets ;
   e. take pictures of the quality of the housing, yards and streets in the community ;
   f. record the sounds in the neighborhood.
2. Before any evaluation of the data collected, ask the students to write their interpretations of the whole experience. Allow half an hour for the completion of this assignment. Have each student discuss his/her views.
3. Have students make charts and drawings of these conditions for display, also have a group of students list and draw some alternatives to the present housing issues.
4. Have students prepare a list of major concerns created as a result of their investigations ; have a person representing the housing authority and some community leaders visit the class to discuss and answer questions about the conditions of the neighborhood.

Discussion questions :

1. What is justice ? Equal housing ? Racism ? Poverty ?
2. Have you seen elements of social justice in the community ?

EXERCISE 12 : WORLD COMMUNITY

Concept : Expressions of the concept of global interdependence can vary widely.

Goal : To develop a visual and/or audio expression of global interdependence.

Strategy : Confluent education.

Reference [12] : Victor and Kraft, pp.10-11.

Exercise :

1. Students, individually or as groups of not more than four, are to develop a visual and/or audio expression of global interdependence. This can be done as a catalog of poetry, songs, quotations and/or pictures ; a slide show ; a slide-tape show, posters ; headlines ; news magazine materials ; charts ; or whatever approach is deemed appropriate. The presentation might be sparked by a statement such as : "When I think of global interdependence, I think of..." or "To me, the term global interdependence means...".
2. As a group, critically analyze each expression to determine similarities and differences among the groups. Allow each group to explain their expression, and create an atmosphere where open feedback can occur.
3. When the critical analysis has been completed and the class has come to a synthetic view about the meaning of global interdependence, have the students present their expressions to an elementary class. The teacher should make the initial contact with the elementary school. Or, the teacher may choose to approach a civic club or other adult group. The students should make their own arrangements with the appropriate individual teacher or leader. The students should discuss with their teacher how they might structure their presentation.

CHAPTER 7

A TEACHER TRAINING MODEL FOR ENVIRONMENTAL VALUES EDUCATION, AND CONCLUSION

Teacher training programs throughout the world have begun to reflect a growing concern with the need for teacher competency in environmental values education. Many of these training programs occur through the study of biology, environmental education and affective education. In Iceland, an in-service teacher training program in biology and ecology has been aimed at teacher competencies in adapting new methods and attitudes in the affective domain [1]. With the recognition that training in the affective component is essential, Czechoslovakian student teachers are taught to use the overall curriculum to impart a wholistic environmental view among students [2]. The Royal Society for the Arts in England emphasizes that valuing is an option that teachers need to be aware of [3]. Canada's Simon Fraser University in British Columbia offers a summer institute in EE for pre- and in-service teacher training that includes the study of environmental ethics and life-styles [4]. Team teaching is seen as an effective means of positively affecting teacher values in Norway [5], where there is a recognized need for training in the psychological and sociological foundations in social change skills to help teachers facilitate values education in the classroom [6].

Teachers need to acquire a solid grounding in the knowledge and skills necessary to effectively handle values education [7]. Values education of any sort is not an easy task, especially in pluralistic societies. It is essential, therefore, that teachers possess the ability to teach sound environmental values to students from diverse backgrounds. A strong knowledge of value philosophy and the psychology of value formation and change is the first step in teacher training in EVE. Each teacher must also be proficient in the skills and knowledge needed to teach environmental values within his or her particular community and educational organization. The necessary background could be provided by coursework and training in the following areas.

This training model is an idealistic concept. Each teacher is encouraged to use these suggestions to identify general areas in which his or her background may be strengthened in order to become more proficient with the theoretical and practical tools of environmental values education.

A PROGRAM OF COURSEWORK AND PRACTICAL TRAINING

Philosophy

Educators should study values more carefully... "if curricular programs are to rest on sound foundations" [8]. Coursework in this area should include a minimum of one course each in introductory philosophy, ethics, logic and environmental ethics. Ideally, additional courses would be taken as appropriate to the teacher's educational focus [9] : the philosophy of religion, the philosophy of science, political philosophy, philosophy of the arts, the history of philosophy, aesthetics, philosophy of education and moral problems in contemporary society. A thorough theoretical and practical background in philosophy will enable

teachers to better teach and understand general and environmental philosophical issues and theory. A well thought out background in philosophy will also help teachers to be more clear about their own personal values and how these are applied in daily life [10].

Dynamics of value formation and change

It is important that educators be familiar with the processes of cognitive and moral development and change within the individual. Some foundation courses in psychology include an introduction to psychology, developmental psychology, behavioral psychology, educational psychology and social psychology. Introductory courses in sociology and social change would be very useful to acquaint teachers with the social nature of values and their change.

Environmental values education methodologies and evaluation techniques

Of crucial importance in teacher education and training is proficiency in choosing and implementing appropriate valuing strategies for EVE. A separate methodologies course needs to be designed in which teachers can learn how and when to use the various EVE methodologies : inculcation, moral development, values analysis, values clarification, action learning, confluent education and behavior modification. It is important to emphasize that each valuing strategy has its particular strengths and weaknesses. A comprehensive EVE program consists of applying a thorough knowledge of all EVE strategies to the specific demands of the student backgrounds and aims of the EVE exercise, as well as the time and place of the activity. Evaluation skills are an essential, yet often overlooked component of EVE programs. Teachers should be able to conduct evaluation of the student's progress and the EVE strategy's effectiveness while it is being conducted and again upon its completion. Evaluating students in an EVE program poses special problems, but in order to be effective, the teacher must take the time to study and learn the personal values of each student.

Communication skills

Especially important in values education are strong capabilities in group organization and interpersonal relations [11]. Some relevant courses would be in interpersonal communication, small group discussion and organizational communication. An effective approach to EVE requires the ability to share one's own values fluently and consistently, to help facilitate the open expression of values by individuals and to facilitate discussions among groups of all ages and backgrounds. Conflicts and controversy are bound to arise during encounters of this kind. The development of some basic skills in conflict resolution is important.

Values education and educational institutions

A major element in any EVE teacher education program must include an investigation into the nature of values education, past and present, within the context of the various formal and non-formal educational institutions. A teacher's knowledge of the values education issue is often crucial to avoid breaking existing rules. Emphasis should be on the problems, constraints and potentials encountered when teaching environmental values. Each teacher needs to be aware of the strength of his or her conviction toward developing a comprehensive EVE program. The attitudes and policies of parents, the community and the school itself set limits of tolerance on how far a teacher may go in teaching values within the particular institution in question. For instance, if a teacher decides to explore student values through the analysis of a controversial issue like world hunger or nuclear power, he or she needs to first become familiar with the school's policy on handling controversial issues in the classroom, and also with the themes to be treated.

A Self-Assessment Checklist on the Need for Pre-Service and In-Service Environmental Values Education Knowledge and Skills

Subject or skill*	Strength of need** for improvement 1	2	3	4	5
Competencies in the Philosophy of Values					
. basic philosophy					
. ethics					
. logic					
. environmental ethics					
. philosophy of religions					
. additional courses - philosophy of science, the arts, education, politics, moral problems in contemporary society, history of philosophy, aesthetics					
Competencies in the dynamics of values					
. cognitive and moral development					
. basic psychology					
. developmental psychology					
. behavioral psychology					
. social psychology					
. educational psychology					
. basic sociology					
. social change theory and methods					
Competencies in EVE					
. theory and methods of EVE					
. EVE evaluation theory and practice					
Competencies in communication skills					
. interpersonal communication					
. small group discussion					
. organizational communication					
. conflict resolution and controversial issues					
Knowledge of the Values Education policies, and attitudes of the school, parents and community, and teacher's own conviction to work toward the aims of EVE					

* competencies are described in detail in the text of the model.

** 1 = solid foundation, little need for improvement at this time ;
5 = weak foundation, further study and/or practice called for.

CONCLUSION

The author hopes that this model will provide a useful tool to complement the first six chapters of the book, which have been both theoretical, in Part I, and pragmatic, in Part II. Nevertheless, because of the diverse peoples who comprise the audience to which this book is addressed, it goes forth with a feeling of humility. The job for each interested teacher will be to adapt this material to make it relevant for her or his learners, while being mindful of cultural, political, religious and familial norms and individual personalities.

Moral education, like any body of knowledge and search for truth, is an evolving and exciting part of education. As any teacher knows, learning is a meld of occasional dramatic advances scattered amid the signs of slow and steady development demonstrated by each learner. Those teachers who choose to design and implement a program in environmental ethics for their students will be furthering humankind's search for a way to teach young people how to lead a virtuous life. A well-planned and deliberate program of moral education, conducted with human warmth and understanding, can help us to nurture individuals who may one day compose a world community where love and justice are the guiding forces behind human behavior toward the earth and other people.

REFERENCES

INTRODUCTION

1. Swan, James. "Behavior : Practice vs. Preach Syndrome", in *What Makes Education Environmental ?*, Noel McInnis and Don Albrecht, eds., 1975. Environmental Educators, Inc., Wash., D.C., p.202.
2. Carson, Rachel. *Silent Spring*, 1962. Fawcett Pubs., Inc., Greenwich, CT., p.244.
3. Commoner, Barry. *The Closing Circle : Man, Nature and Technology*, 1971. Bantam Books, Inc., N.Y., p.9.
4. Brown, Lester. *In the Human Interest : A Strategy to Stabilize World Population*, 1974. W.W. Norton and Co., Inc., N.Y., pp.184-85.
5. Brandwein, Paul F. *et al. Ekistics : A Handbook for Curriculum Development in Conservation and Environmental Education*, 1971. California State Dept. of Education, Sacramento.
6. Harshman, R. "Value Education Processes for an Environmental Education Program", *Journal of Environmental Education*, 10:30-34 (1978-1979).
7. Lamb, William. "Classroom Environmental Value Clarification", *Journal of Environmental Education*, 6(4):14-17 (1975).
8. Miles, J.C. "Study of Values in Environmental Education", *Journal of Environmental Education*, 3:165-174 (1977).
9. Yaple, Charles H. "The Christian Church and Environmental Education : A Study of Involvements in the United States", Ph.D. Dissertation, 1982, State University of New York, College of Environmental Science and Forestry. Syracuse, N.Y., pp.3-4.
10. Baer, Richard A., Jr. "Our Need to Control : Implications for Environmental Education", *American Biology Teacher*, 38:473-476 (1976).
11. Harshman, *op. cit.*
12. King, David C. *Global Perspectives : A Humanistic Influence on the Curriculum*, 1976. Center for Global Perspectives, New York, N.Y.
13. Kriebs, J.O. and A. Schatz. "Attitudes in Environmental Education", *Science and Child*, 10:33 (1973).
14. Lamb, *op. cit.*
15. Miles, *op. cit.*
16. Shaver, James P. "Environmentalism and Values", *Journal of Environmental Education*, 4(1):49-53 (1972).
17. Stapp, William B. "An Instructional Program Approach to Environmental Education (K-12) - Based on an Action Model", revised, unpublished manuscript, University of Michigan, School of Natural Resources, April 1980, pp.25-27.
18. Unesco. *The International Workshop of Environmental Education : Belgrade, Yugoslavia*, 1975. Paris, France, pp.1-60.
19. Unesco. *Intergovernmental Conference on Environmental Education : Tbilisi, USSR. A Draft Final Report*, 1977. Paris, France, pp.1-69.
20. Capurro, Dr. Luis F. "A Case Study of Environmental Education in the Occidental Highlands of Guatemala", in Margaret E. Cowan and William B. Stapp, *Environmental Education in Action - V : International Case Studies in Environmental Education*, 1982. ERIC, Columbus, Ohio, pp.226-229.
21. Nordic Cultural Cooperation. *The Teaching of Environmental Education in Nordic Compulsory Schools*, 1977. The Secretariat for Nordic Cultural Cooperation, Copenhagen, Denmark, pp.1-22.

22. Allen, Dr. Irma A. "Environmental Education for Nomads : A Test Case in Kenya", in Cowan and Stapp, *op. cit.*, pp.240-248.
23. Kim, Dong Jun. "Educational Development on Environmental Ecology for Schools and Voluntary Associations in Korea", in Cowan and Stapp, *op. cit.*, pp.63-66.
24. Environmental Council of the Government of the Czech Socialist Republic. *Environmental Education : Guidelines in Methodology for Teachers of General Subjects at Elementary and Secondary Schools in the Czechoslovak Socialist Republic*, 1975. Research Institute of Building and Architecture, Prague, pp.1-101.
25. Environmental Education Programme, Costa Rican Ministry of Education, Centre for the Improvement of Science teaching, 1983.
26. Federal Ministry of the Interior. *Report of the Federal Republic of Germany on the Human Environment*, 1972, pp.1-160.
27. Carson, Sean. *Teachers for Environmental Education*, County Advisor for Environmental Education, 1978. The Royal Society for Arts, England, pp.1-10.
28. National Association for Environmental Education. *Environmental Education : A Statement of Aims*, 1976, Birmingham, England, pp.1-11.
29. Von Hofsten, Anne. "Environmental Education in Sweden : A Project on Natural and Technical Science", in Cowan and Stapp, *op. cit.*, pp.140-145.
30. Laptev, Innokenti. "Environmental Education in the USSR", in Cowan and Stapp, *op. cit.*, pp.37-44.
31. Huen-pu, Wang. "General Review of Environmental Education in China", in Cowan and Stapp, *op. cit.*, pp.45-47.
32. Jakowska, Sophie. "Environmental Education in the Dominican Republic", in Cowan and Stapp, *op. cit.*, pp.50-57.
33. Krasilchik, Myriam. "A Project of Environmental Education in Brazil", in Cowan and Stapp, *op. cit.*, pp.192-196.
34. Fensham, Peter J. and Stewart G. Jackel. "Garden Settings for Environmental Education : Case Study Two", Royal Melbourne Educational Center, Australia, in Cowan and Stapp, *op. cit.*, pp.251-253.
35. Robottom, Ian M. "Environmental Education at Deakin University, Australia : An Issue-based Approach", in Cowan and Stapp, *op. cit.*, pp.275-286.
36. Trant, Anton. "The European Community Environmental Network", in Cowan and Stapp, *op. cit.*, pp.77-86.
37. Knapp, Clifford E. and Joel Goodman. *Humanizing Environmental Education : A Guide for Leading Nature and Human Nature Activities*, 1981. American Camping Association, Martinsville, IN., 265p.
38. Stapp, William B. and Dorothy A. Cox. *Environmental Education Activities Manual*, 1979. Available from authors at 32493 Shady Ridge Drive, Farmington Hills, Michigan, 48018, USA. 764p.
39. Van Matre, Steven. *Sunship Earth*, 1979. American Camping Association, Martinsville, IN., 265p.
40. Caduto, Michael J. "A Review of Environmental Values Education", *Journal of Environmental Education*, 14(3):13-21 (Spring) 1983.
41. Caduto, Michael J. "Toward a Comprehensive Strategy for Environmental Values Education", *Journal of Environmental Education*, 14(4):12-18 (Summer) 1983.
42. Knapp, Clifford E. "A Curriculum Model for Environmental Values Education", *Journal of Environmental Education*, 14(3):22-26 (Spring) 1983.
43. Stapp, William B. (1980).
44. Simon, Sidney, Leland Howe and H. Kirschenbaum. *Values Clarification : A Handbook of Practical Strategies for Teachers and Students*, 1972. Hart Pub. Co., N.Y., pp.18-19.
45. Skinner, B.F. *Beyond Freedom and Dignity*, 1971. Bantam Books, Inc., N.Y., pp.96-120.

CHAPTER 1

1. Scheibe, Karl E. *Beliefs and Values*, 1970. Holt, Rinehart and Winston, Inc., N.Y., p.11.
2. Rokeach, Milton. *Beliefs, Attitudes and Values : A Theory of Organization and Change*, 1976. Jossey-Bass, Pub., San Francisco, CA., p.92.
3. Kluckhohn, Clyde. "Values and Value Orientations in the Theory of Action : An Exploration in Definition and Classification", in Talcott Parsons, and Edward A. Shils (eds.), *Toward a General Theory of Action*, 1957. Harvard University Press, MA., p.432.

4. Rokeach (1976), p.94.
5. *Ibid.*, p.11.
6. *Ibid.*, p.2.
7. *Ibid.*, p.90.
8. Zimbardo, Philip G., Ebbe V. Ebbesen and Christian Maslach. *Influencing Attitudes and Behavior*, 1977. Addison, Wesley Pub. Co., Inc., Philippines, pp.20-21.
9. Sherif, Muzafer and Hadley Cantril. "The Psychology of Attitudes", *The Psychol. Review*, 52:295-319 (1945).
10. Rokeach (1976), p.116.
11. Rokeach, Milton. *The Nature of Human Value*, 1973. MacMillan Pub. CO., Inc., N.Y., p.5.
12. Rokeach (1976), p.125.
13. Rokeach (1973), pp.7-8.
14. Rokeach (1976), p.125.
15. Rokeach (1973), p.52.
16. Rokeach (1976), p.124.
17. Arbuthnot, Jack. "The Roles of Attitudinal and Personality Variables in the Prediction of Environmental Behavior and Knowledge", *Environment and Behavior*, 9(2):217-232 (1977), p.217.
18. Lewis, Clarence Irving. *An Analysis of Knowledge and Valuation*, 1946. Thelpen Court Publ. Co., Ill., p.366.
19. Rokeach (1973), p.13.
20. Rokeach (1976), p.165.
21. Rokeach (1973), p.159.
22. *Ibid.*, p.13.
23. *Ibid.*, p.20.
24. Triandis, Harry C. and Earl E. Davis. "Race and Belief as Determinants of Behavioral Intentions", *J. Personality and Social Psych.*, 2(5):715-725, November 1965.
25. Arbuthnot, p.219.
26. Maloney, M. and M. Ward. "Ecology : Let's Here it from the People", *Amer. Psychologist*, 7:583-586 (1973), in Arbuthnot, *op. cit.*, p.321.
27. Kluckhohn, p.403.
28. Scheibe, p.95.
29. Morris, Charles. *Varieties of Human Value*, 1956. University of Chicago Press, Ill., p.69.
30. Rokeach (1973).
31. Frischnecht, Ursula and Kurt Frischnecht. "Values Education and the Environment", 1980. Unpublished research report, Univ. of Michigan School of Natural Resources, Ann Arbor, MI., p.1.
32. Scheibe, p.95.
33. Silver, Michael. *Values Education*, 1976. National Education Association, Wash., D.C., p.19.
34. Frischnecht, p.2.
35. Erikson, Erik H. *Childhood and Society*, 1950. W.W. Norton and Co., Inc., N.Y., pp.247-274.
36. Frischnecht, p.2.
37. Silver, p.20.
38. Skinner, B.F. *Beyond Freedom and Dignity*, 1971. Bantam Books, Inc., N.Y., p.105.
39. Piaget, Jean. *The Moral Judgment of the Child*, 1932. Harcourt, Brace and Co., N.Y., p.404.
40. *Ibid.*, p.405.
41. *Ibid.*, p.103.
42. *Ibid.*, p.14.
43. *Ibid.*, p.11.
44. *Ibid.*, pp.1-103.
45. *Ibid.*, p.194.
46. *Ibid.*, p.196.
47. Kohlberg, Lawrence. "Development of Moral Character and Moral Ideology", in Martin L. Hoffman and Lois Wladis Hoffman, *Review of Child Development Research*, 1964. Russell Sage Foundations Pub., N.Y.
48. Kohlberg, Lawrence. "The Child as Moral Philosopher", in Barry I. Chazan and Jonas F. Soltis (eds.), *Moral Education*, 1973. Columbia University Press, N.Y.
49. *Ibid.*, p.135.

50. Miles, J.C. "Study of Values in Environmental Education", *J. of Environmental Education*, 9(3):165-174 (Winter) 1978.
51. Chazan, Barry I. and Jonas F. Soltis (eds.). *Moral Education*, 1973. Columbia University Press, N.Y., p.136.
52. Silver, pp.21-22.
53. Kohlberg, Lawrence. *The Philosophy of Moral Development : Moral Stages and the Idea of Justice* (vol.1), 1981. Harper & Row Pub., San Francisco, p.47.
54. Gilligan, Carol. *In a Different Voice*, 1982. Harvard University Press, Cambridge, MA., and London, p.14.
55. *Ibid.*, p.17.
56. *Ibid.*, pp.25-29.
57. *Ibid.*, pp.7-8.
58. *Ibid.*, pp.172-173.
59. *Ibid.*, p.57.
60. White, Lynn, Jr. *Dynamo and Virgin Reconsidered : Essays in the Dynamism of Western Culture*, 1968. The MIT Press, Cambridge, MA., pp.60-61.
61. Kohlberg, Lawrence. "The Development of Children's Orientations Toward a Moral Order", *Vita Humana*, 6:11-33 (1963).
62. Scott, William A. "Cognitive Consistency, Response Reinforcement and Attitude Change", *Sociometry*, 22(3):219-229 (September, 1959).
63. McGuire, William F. "Cognitive Consistency and Attitude Change", *J. Abnormal and Social Psychol.*, 60:345-353 (1960).
64. Zimbardo, p.138.
65. Festinger, Leon. *A Theory of Cognitive Dissonance*, 1957. Row, Peterson & Co., Ill., p.1.
66. Feldman, Shel (ed.). *Cognitive Consistency : Motivational Antecedents and Behavioral Constraints*, 1966. Academic Press, N.Y., p.48.
67. Osgood, Charles E. and Percy H. Tannenbaum. "The Principle of Congruity in the Prediction of Attitude Change", *Psychol. Review*, 62:42-55 (1955).
68. Feldman, p.1.
69. Rokeach (1973), p.332.
70. Rokeach (1976), p.85.
71. Festinger, p.17.
72. Rokeach (1973), p.234.
73. Festinger, pp.16, 207.
74. Kelman, Herbert C. "Compliance, Identification and Internalization : Three Processes of Attitude Change", *J. Conflict Resol.*, 2:51-60 (1958).
75. Feldman, p.168.
76. Zimbardo, p.57.
77. Wagner, Richard V. and John J. Sherwood. *The Study of Attitude Change*, 1969. Brooks/Cole Pub. Co., CA., p.192.
78. Zimbardo, pp.81-82.
79. *Ibid.*, pp.72-75.
80. *Ibid.*, p.145.
81. Festinger, p.208.
82. *Ibid.*, p.240.
83. *Ibid.*, p.21.
84. Zimbardo, pp.26-64.
85. Coch, Lester and John R.P. French, Jr. "Overcoming Resistance to Change", *Human Relations*, 1(4):512-532 (1948).
86. Katz, D. and E. Stotland. "A Preliminary Statement to a Theory of Attitude Change", 1959, in Wagner, pp.4-6.
87. *Ibid.*
88. Wagner, p.11.
89. *Ibid.*, p.173.
90. Festinger, pp.12-13.
91. Wagner, pp.173-183.
92. McGuire, William J. "Persistance of the Resistance to Persuasion Induced by Various Types of Prior Belief Defenses", *J. Abnormal and Social Psychol.*, 64:241-248 (1962).
93. Maslow, Abraham H. *Religions, Values and Peak Experiences*, 1964. Ohio State University Press, Columbia, Ohio, p.97.
94. Lowry, Richard J. (ed.). *Dominance, Self-Esteem, Self-Actualization : Germinal Papers of A.H. Maslow*, Brooks/Cole Pub. Co., Monterey, CA., p.178.

95. Maslow, Abraham H. *New Knowledge in Human Values*, 1959. Harper & Row Pub., N.Y., p.126.
96. *Ibid.*, p.133.
97. *Ibid.*, p.174.
98. Maslow (1964), p.97.
99. Lowry, pp.154-164.
100. Freire, Paulo. *Pedagogy of the Oppressed*, 1974. The Seabury Press, N.Y., p.31.
101. Lowry, p.167.
102. Elder, Frederick. *Crisis in Eden*, 1970. Abingdon Press, N.Y., p.141
103. Yaple, Charles H. "The Christian Church and Environmental Education : A Study of Involvements in the United States", Ph.D. Dissertation, 1982. State University of New York, College of Environmental Science and Forestry, Syracuse, N.Y., p.3.
104. Baer, Richard A., Jr. "Religion and Environment", paper presented to 21st Nat'l Cons'n Ed. Ass'n Conf., Syracuse, N.Y., August 11-14, 1974, p.10. Quoted in Yaple, p.41.
105. Lowry, p.168.
106. White, p.45.
107. Maslow (1964), p.97.
108. Lowry, p.167.

CHAPTER 2

1. Silver, Michael. *Values Education*, 1976. National Education Association, Wash., D.C.
2. Superka, D.P. ; C. Ahrens ; J.E. Hedstrom ; L.J. Ford ; and P.L. Johnson. *Values Education Sourcebook*, 1976. Social Science Education Consortium, ERIC Clearinghouse for Social Studies/Social Science Education, Columbus, Ohio.
3. Frischnecht, Ursula and Kurt Frischnecht. "Values Education and the Environment", 1980. Unpublished research report, Univ. of Michigan School of Natural Resources, Ann Arbor, MI., p.1.
4. Rich, John Martin. *Education and Human Values*, 1968. Addison-Wesley Pub. Co., Inc., Philippines, p.48.
5. *Ibid.*, p.v.
6. *Ibid.*, p.120.
7. Kolb, William L. "Values, Determinism and Abstraction", in Donald N. Barrett (ed.), *Values in America*, 1961. Univ. of Notre Dame Press, Indiana, p.70.
8. Rokeach, Milton. *Beliefs, Attitudes and Values. A Theory of Organization and Change*, 1976. Jossey-Bass Pub., San Francisco, CA., p.124.
9. Dispoto, Raymond G. "Moral Valuing and Environmental Variables", *J. Research in Science Teaching*, 14(4):273-280 (1977).
10. Ramsey, Charles E. "Environmental Knowledge and Attitudes", *J. Environmental Education*, 8(1):10-18 (Fall, 1976).
11. Pettus, Alvin. "Environmental Education and Environmental Attitudes", *J. Environmental Education*, 8(1):48-51 (Fall, 1976).
12. Stapp, William B. "Environmental Encounters", *Environmental Education*, 2(1):35-41 (Fall, 1970).
13. Borden, Richard J. and Andrew P. Schettino. "Determinants of Environmentally Responsible Behavior", *J. Environmental Education*,10(4):35-39 (1979).
14. Horsley, Doyne A. "The Effects of a Social Learning Experiment on Attitudes and Behavior Toward Environmental Conservation", *Environment and Behavior*, 9(3):349-383 (1977).
15. Swan, James A. "An Analysis of Attitudes and Coping Strategies of High School Youth : Response to Air Pollution", 1969. Ph.D. Dissertation, Univ. of Michigan, School of Natural Resources, Ann Arbor, MI., p.98.
16. Kohlberg, Lawrence. "The Child as Moral Philosopher", in Barry I. Chazan and Jonas F. Soltis (eds.), *Moral Education*, 1973, Columbia Univ. Press, N.Y., pp.132-135.
17. Kohlberg, Lawrence. *The Philosophy of Moral Development : Moral Stages and the Idea of Justice* (vol.1), 1981. Harper & Row Pub., San Francisco, p.47.
18. Kohlberg, L. and E. Turiel. "Moral Development and Education", in Gerald S. Lessa (ed.), *Psychology and Educational Practice* , 1976. Scott Foresman & Co., Glenview, ILL., p.416.
19. Superka, p.21.

20. Butterfield, Charles H. *Values and Biology*, 1983. J. Weston Walch, Pub., Portland, Maine, pp.134-135.
21. Piaget, Jean. *The Moral Judgment of the Child*, 1932. Harcourt, Brace & Co., N.Y., p.185.
22. Gilligan, Carol. *In a Different Voice*, 1982. Harvard University Press, Cambridge, MA. and London, p.14.
23. Bennett, William J. and Edwin J. Delattre. "Moral Education in the Schools", *The Public Interest*, 50:81-98 (Winter, 1978).
24. Delattre, Edwin J. and William J. Bennett. "Where the Values Movement Goes Wrong", *Change*, 11(1):38-43 (1979).
25. Allen, Rodney F. "But the Earth Abideth Forever : Values in Environmental Education", 1975. National Council for Geographic Education (Instructional Activity Series), pp.1-8.
26. Miles, J.C. "Study of Values in Environmental Education", *J. Environmental Education*, 9(2):165-174 (Winter, 1978).
27. Piburn, Michael C. "The Environment : A Human Crisis". Paper presented at the National Council for Social Studies, San Francisco, CA., November 19-24, 1973.
28. Stahl, Robert J. "Valuing Exercises for the Environmental Education Classroom", 1976. ERIC. ED 141 094.
29. Dispoto.
30. Knapp, Clifford E. and Joel Goodman. *Humanizing Environmental Education : A Guide for Leading Nature and Human Nature Activities*, 1981. American Camping Association, Martinsville, IN.
31. Superka, p.18.
32. Hawley, Robert C. *Value Exploration Through Role-Playing*, 1974. Education Research Associates, Amherst, MA., p.v.
33. Kachaturoff, Grace. "Teaching Values in the Public Schools", *The Social Studies*, 64(5):222-226 (1973).
34. Superka, p.21.
35. Kachaturoff.
36. Superka, p.21.
37. Knapp, Clifford E. "Values that Make Better Camping", *Camping Magazine*, 51(5):8-9 (April, 1979).
38. Peyton, R. Ben and Barbara Ann Miller. "Developing an Internal Locus of Control as a Prerequisite to Environmental Action". Michigan State University Research Report, presented at the National Environmental Education Conference, Albuquerque, New Mexico, May 23-27, 1980.
39. Knapp.
40. Costa, A.L. "Affective Education - The State of the Art", *Educational Leadership*, 34:260-263 (1977).
41. Silver, p.74.
42. *Ibid.*, p.64.
43. Miles.
44. Stronck, C.R. "Affective Domain in Environmental Education", *American Biology Teacher*, 36:107-109 (1974).
45. Raths, Louis ; Merrill Harmin and Sidney B. Simon. *Values and Teaching*, 1966. Charles E. Merrill Pub. Co., Columbus, Ohio, p.30.
46. Silver, p.17.
47. *Ibid.*, p.18.
48. Simon, Sidney B. ; Howard Kirschenbaum and Leland W. Howe. *Values Clarification : A Handbook of Practical Strategies for Teachers and Students*, 1978. Hart Pub. Co., Inc., N.Y., p.19.
49. Hall, Robert T. and John U. Davis. *Moral Education in Theory and Practice*, 1975. Prometheus Books, Buffalo, N.Y., p.19.
50. Butterfield, pp.23-24.
51. Colby, Anne. Book review on "Values and Teaching" by Roths, Louis E. ; Merrill Harmin and Sidney B. Simon; 1966. *Harvard Educational Review*, 45(1):234-243 (1975).
52. Lockwood, Alan L. "The Effects of Values Clarification and Moral Development Curricula on School-Age Subjects : A Critical Review of Recent Research", *Review of Educational Research*, 48(3):323-364 (Summer, 1978).
53. Baer, Richard A., Jr. "A Critique of the Use of Values Clarification in Environmental Education", *J. Environmental Education*, 12(1):13-16 (Fall, 1980).

54. Lockwood, Alan L. "A Critical Review of Values Clarification", *Teachers College Record*, 77(1):35-50 (1975).
55. Stewart, John S. "Clarifying Values Clarification : A Critique", *Phi Delta Kappan*, 56:684-688 (June, 1975).
56. Baer, Richard A., Jr. "Values Clarification as Indoctrination", *The Educational Forum*, 41(2):155-165 (1973).
57. Lockwood (1978).
58. Bennett, William.
59. Baer (1973).
60. Delattre.
61. Simon, p.24.
62. *Ibid.*, pp.25-26.
63. Colby.
64. *Ibid.*
65. Gengi, A.A. and J.J. Santuosso. "Values Clarification for Ecology", *Science Teacher*, 41:37-39 (1974).
66. Gutierrez, Robert. "Unit on Political Decision Making and Action Strategy Over a Local Problem", 1975. Florida Department of Education, Tallahassee, Florida.
67. Holbrook, Matson B. "Values Analysis and Clarification for Environmental Education Using the Environmental Encounter Approach", 1971. Masters Thesis, Univ. of Michigan School of Natural Resources, Ann Arbor, MI.
68. Knapp, Clifford E. and Judith A. DuShane. "Clarifying Values for a Better Environment", *Counseling and Values*, 18(4):266-271 (Summer, 1974).
69. Lamb, William. "Classroom Environmental Values Clarification", *J. Environmental Education*, 6(4):14-17 (1975).
70. Miles.
71. Shaver, James P. "Environmentalism and Values", *J. Environmental Education*, 4(1):49-53 (1972).
72. Stapp, William B. and Dorothy Cox. *Environmental Education Activities Manual*, 1979 Available from authors at 32493 Shady Ridge Drive, Farmington Hills, Michigan, 48018, USA, 764p.
73. Superka, p.19
74. Silver, p.84.
75. *Ibid.*
76. Stillwell, W.E. "Systems Approach for Implementing an Affective Education Program", *Counselor Education and Supervision*, 15:200-210 (1976).
77. Costa.
78. Gutierrez.
79. Knapp.
80. Silver, p.78.
81. *Ibid.*,pp.79-80.
82. Kendall, O.L. "Building an Ecological Conscience", *Science and Child*, 14:25-27 (1977).
83. Baer, Richard A., Jr. "Our Need to Control : Implications for Environmental Education", *American Biology Teacher*, 38:473-476 (1976).
84. Van Matre, Steven. *Sunship Earth*, 1979. American Camping Association, Martinswille, Indiana.
85. Skinner, B.F. *Beyond Freedom and Dignity*, 1971. Bantam Books, N.Y., p.3.
86. Grear, Michael J. "Integrating Skinnerian Concepts of Human Behavior Modification into the Environmental Encounter Approach", 1973. Masters Thesis, Univ. of Michigan School of Natural Resources, Ann Arbor, MI.

CHAPTER 3

1. Pettus, Alvin. "Environmental Education and Environmental Attitudes", *J. Environmental Education*, 8(1):48-51 (Fall, 1976).
2. Caduto, Michael J. "Toward a Comprehensive Strategy for Environmental Values Education", *Journal of Environmental Education*, 14(4):12-18 (Summer, 1983).
3. Wieman, Henry Nelson. *Seeking a Faith for a New Age*, 1975. The Scarecrow Press, Inc., Metuchen, N.J., p.310.

4. Storer, John H. *The Web of Life*, 1953. New American Library Inc., N.Y., p.125.
5. Hourani, George F. *Ethical Value*, 1955. University of Michigan Press, Ann Arbor, MI., p.84.
6. Leopold, Aldo Starker. *A Sand County Almanac with other Essays in Conservation from Round River*, 1961. Columbia Univ. Press, N.Y., p.225.
7. *Ibid.*, p.240.
8. Lewis, Clarence Irving. *An Analysis of Knowledge and Valuation*, 1946. Thelpen Court Pub. Co., Ill., p.400.
9. Lafferty, Theodore T. *Nature and Values*, 1976. Univ. of South Carolina Press, Columbia, S.Ct, p.24.
10. Hare, R.M. "Decisions of Principle" in Barry I. Chazan, "The Moral Situation : A Prolegomenon to Moral Education". In Barry I. Chazan and Jonas F. Soltis (eds.), *Moral Education*, 1973, Columbia Univ. Press, N.Y., pp.100-101.
11. Peirce, Charles S. *Values in a World of Chance*, 1958. Philip P. Wiener (ed.), Stanford Press, CA., p.40.
12. Booth, Wayne C. *Modern Dogma and the Rhetoric of Assent*, 1970. Univ. of Notre Dame Press, Indiana.
13. Polanyi, Michael. *Personal Knowledge*, 1958. Routledge and Kegan Paul, London.
14. Dewey, John. "Theory of Valuation", *International Encyclopedia of Unified Science*, 2:4 (1939). The Univ. of Chicago Press, Chicago. Ill., p.58.
15. James, William. *The Moral Responsibility of the American Nation : A Discourse*, 1838, E. Peck and Co., p.181.
16. Rokeach, Milton. *The Nature of Human Values*, 1973. MacMillan Pub. Co., Inc., N.Y., pp.57-159.
17. *Ibid.*, pp.7-8.
18. *Ibid.*, pp.92-94.
19. Quoted in Niebuhr, Reinhold. *The Nature and Destiny of Man*, 1941. Charles Scribner's Sons, N.Y., p.107.
20. Frankena, William K. "Toward a Philosophy of Moral Education", in Chazan, p.148.
21. Rich, John Martin. *Education and Human Values*, 1968. Addison-Wesley Pub. Co., Inc., Philippines, pp.3-4.
22. Hall, Robert T. and John U. Davis. *Moral Education in Theory and Practice*, 1975. Prometheus Books, Buffalo, N.Y., pp.28-31.
23. Dewey, John. *Moral Principles in Education*, 1909. Houghton Mifflin Co., Boston, MA., p.47.
24. Kohlberg, Lawrence. "Development of Moral Character and Moral Ideology", in Martin L. Hoffman and Lois Wladis Hoffman, *Review of Child Development Research*, 1964. Russell Sage Foundation Pub., N.Y., p.425.
25. Rich, pp.115-118.
26. Freire, Paulo. *Pedagogy of the Oppressed*, 1974. The Seabury Press, N.Y., p.60.
27. *Ibid.*, pp.80-81.
28. Thoreau, Henry David. *Walden*, 1951. Norton & Co., Inc., N.Y., p.29.

CHAPTER 4

1. Dewey, John. *Moral Principles in Education*, 1909. Houghton Mifflin Co., Boston, MA.
2. *Ibid.*
3. Dewey, pp.57-58.
4. *Ibid.*, p.7.
5. Wieman, Henry Nelson. *Seeking a Faith for a New Age*, 1975. The Scarecrow Press, Inc., Metuchen, N.J., p.210.
6. Chazan, Barry I. "The Moral Situation ; A Prolegomenon to Moral Education", in Barry I. Chazan and Jonas F. Soltis (eds.), *Moral Education*, 1973. Columbia University Press, N.Y., p.39.
7. Dewey, p.2.
8. *Ibid.*, p.58.
9. Silver, Michael. *Values Education*, 1976. National Education Association, Wash., D.C., p.10.

10. Superka, D.P. ; C. Ahren ; J.E. Hedstrom ; L.J. Ford and P.L. Johnson. *Values Education Sourcebook*, 1976. Social Science Education Consortium, ERIC Clearinghouse for Social Studies/Social Science Education, Columbus, Ohio.
11. Gault, Walter N. "Teacher Accountability for Moral Education", *Social Education*, 39:29-32 (January, 1975).
12. Mager, Robert F. *Preparing Instructional Objectives*, 1975. Fearon Pub., Inc., Belmont, CA., p.5.
13. *Ibid.*, p.87.
14. *Ibid.*, p.43.
15. Stapp, William B. and Dorothy A. Cox. *Environmental Education Activities Manual*, 1979. Thomson-Shore, Inc., Dexter, Michigan.

Available from authors at 32493 Shady Ridge Drive, Farmington Hills, Michigan, 48018, USA, pp.345-346.
16. Maslow, Abraham J. *Religions, Values, and Peak Experiences*. 1964. Ohio State University Press, Columbus, Ohio, p.49.
17. Knapp, Clifford E. and Joel Goodman. *Humanizing Environmental Education : A Guide for Leading Nature and Human Nature Activities*, 1981. American Camping Association, Martinsville, IN., p.182-184.
18. Chazan, Barry and Jonas Soltis, p.15.
19. Frankena, William K. *Ethics*, 1973. Prentice Hall, Inc., Englewood Cliffs, N.J., p.14.
20. Freire, Paulo. *Pedagogy of the Oppressed*, 1974. The Seabury Press, New York, p.34.
21. Caduto, Michael J. "Toward a Comprehensive Strategy for Environmental Values Education", *Journal of Environmental Education*, 14(4):12-18 (Summer, 1983).
22. Superka, pp.17-20.
23. Maslow, Abraham H. *The Psychology of Science : A Reconnaissance*, 1966. Harper & Row Pub., N.Y., pp.11-25.
24. Jones, Richard M. *Fantasy and Feeling in Education*, 1968. New York University Press, N.Y., p.125.
25. Sloan, p.4.
26. Maslow, Abraham H. *New Knowledge in Human Values*, 1959. Harper & Row Pub., N.Y., p.130.
27. Knapp, p.117.
28. Sorokin, Pitrim A. "The Powers of Creative Unselfish Love", in Maslow (1959), p.12.
29. Maslow (1966), pp.116-117.
30. Dewey, pp.8-9.
31. *Ibid*, pp.23-24.
32. *Ibid.*, p.26.
33. Hall, Robert T. and John U. Davis., *Moral Education in Theory and Practice*, 1975. Prometheus Books, Buffalo, N.Y., p.30.
34. Dewey, p.50.
35. *Ibid.*, p.55.
36. Freire, p.19.
37. *Ibid.*, p.67.
38. Knapp, Clifford E. "Developing an Environmental Ethic : A Values Education Model", *Science Activities* (April-May, 1980), pp.39-42.
39. Butterfield, Charles H., *et al.* *Know Nukes : A Nuclear Power Curriculum Project*, 1982. Antioch/New England Graduate School, Keene, N.H., p.4.
40. Stapp, William B. "Environmental Education Seminar", 1980. University of Michigan School of Natural Resources, Ann Arbor, MI.
41. Sloan, p.254.

CHAPTER 5

1. Bowman, Mary Lynne. *Values Activities in Environmental Education*, 1979. ERIC, Ohio State University, Columbus, Ohio, p.27.
2. Liston, Mary Dawn. In *Environmental Problems in Big Cities*, 1983. Unesco, Paris, France.

3. Kohuth, Barbara and Boyd T. Marsh. *An Educational Guide for Planning an Improved Human Environment*, 1974. Inner Circle Press Inc., Hudson, Ohio. ED 141 081. In Lori D. Mann and William B. Stapp, *Thinking Globally and Acting Locally : Environmental Education Teaching Activities*, ERIC, Ohio State University, Columbus, Ohio, pp.101-102.
4. Coon, Herbert L. and Mary Lynne Bowman. *Energy Activities for the Classroom, Volume II*, 1978. ERIC/SMEAC. Columbus, Ohio. ED 173 072. In Mann and Stapp, pp.51-52.
5. Bowman (1979), p.37.
6. Vizzini, Charles T. *Valuing the Environment - Secondary*, 1975. Charlotte-Mecklenburg Environmental Education Project, Charlotte, North Carolina. ED 134 449. In Bowman (1979), pp.42-43.
7. American Forest Institute. *Project Learning Tree. Supplementary Curriculum Guide for Grades K-6*, 1977. In Bowman (1979), p.29.
8. Miller, Barbara. *Thinking Globally, Acting Locally About Food, Population and Energy Issues, 7th Grade Interdisciplinary Unit*, 1979. Aurora Public Schools, Aurora, CO., pp.11-13. ED 199 120. In Mann and Stapp, pp.287-289.
9. Suggested by Susan Ahearn, Doctoral Student, Science-Mathematics Education. The Ohio State University. In Bowman (1979), pp.45-48.
10. Cowan, Margaret and William B. Stapp. *Environmental Education in Action-V : International Case Studies in Environmental Education*, 1982. ERIC, Columbus, Ohio, pp.209-220.
11. Johnson, Jacqueline and John Benegar. *Global Issues in the International Classroom*, 1981. Social Science Education Consortium, Boulder, CO., pp.53-56. ED 209 125. In Mann and Stapp, pp.231-234.

CHAPTER 6

1. Butterfield, Charles H. *et al. Know Nukes : A Nuclear Power Issues Curriculum Project*, 1982. Antioch/New England Graduate School, Keene, N.H., pp.17-20.
2. Butterfield, Charles H. *Values and Biology*, 1983. J. Weston Walsh Pub., Portland, Maine, pp.35-36.
3. *Ibid.*, pp.214-216.
4. Wahl, Mark. *Two-Wheel Math : An Application Module*, 1974. University of Denver Mathematics Laboratory, Regional Center for Pre-College Mathematics, Denver, Colorado, pp.100-101. ED 183 413. In Lori D. Mann and William B. Stapp, *Thinking Globally and Acting Locally : Environmental Education Teaching Activities*, 1982. ERIC, Columbus, Ohio, pp.94-96.
5. Roth, Charles E. and Linda G. Lockwood. *Strategies and Activities for Using Local Communities as Environmental Education Sites*, 1979. ERIC/SMEAC. Columbus, Ohio, pp.103-104. In Mann and Stapp (1982), pp.120-121.
6. Unesco, Strategic Environmental Planning. *Internet : International Environmental Resources Network Teachers Guide*, 1977. Threshold, Inc., Concord, Mass., Report No.38. In Mann and Stapp, p.159.
7. Parker, Sylvia ; Bennie Bezuidenhout ; Chiverage Chimombe ; Andy Crabb and Rob Heberden. *Environmental Science and Agriculture, Group Activity Book, Grade 6*, 1981. Longman Zimbabwe (PUT) Ltd., Salisbury, Zimbabwe, pp.84-85. In Mann and Stapp, pp.125-126.
8. Butterfield (1983), p.250-253.
9. Millar, Jayne. "Development : Alternative Priorities for the Future", *Intercom*, 73:22-24 (September, 1973). In Mann and Stapp, pp.298-301.
10. Butterfield (1983), pp.274-275.
11. Stapp, William B. and Dorothy A. Cox. *Environmental Education Activities Manual*, 1979. Available from authors at 32493 Shady Ridge Drive, Farmington Hills, Michigan, 48018, USA, pp.385-386.
12. Victor, David and Richard Kraft. *Global Perspectives Handbook, Experimental Edition*, 1976. Mid-America Program for Global Perspectives in Education. Bloomington, Indiana, pp.10-11. ED 115 558. In Mann and Stapp, p.245.

CHAPTER 7

1. Ministry of the Environment. *Environmental Education in Norway : Post Secondary Level*, 1976. Oslo, Norway, pp.1-95.
2. Koci, Jaroslar. *Personal Correspondence* of December 20, 1980. Chief of Dept. of Ministry, Prague, Czechoslovakia. William B. Stapp.
3. Carson, Sean. *Teachers for Environmental Education*, 1978. County Advisor for Environmental Education, The Royal Society for the Arts, England, pp.1-10.
4. McClaren, Milton. *Personal Correspondence* of 10 January 1980. Simon Fraser University, Barnaby, B.C., Canada. William B. Stapp.
5. Unesco. *Comment*, Paris, France, 4(3):1-8 (September, 1979).
6. Selim, Saber. "Environmental Education at the Tertiary Level for Teachers", *Trends in Environmental Education*, 1977, Unesco, Paris, France.
7. Goldbecker, Sheralyn S. *Values Teaching*, 1976. National Education Association, Washington, D.C., p.19.
8. Rich, John Martin. *Education and Human Values*, 1968. Addison-Wesley Pub. Co., Inc., Philippines, p.7.
9. *Ibid.*
10. Goldbecker, p.22.
11. Silver, Michael. *Value Education*, 1976. National Education Association, Washington, D.C., p.10.

ADDITIONAL SOURCES FOR TEACHERS

Books

Bowman, Mary Lynne. *Values Activities in Environmental Education*, 1979. ERIC, Ohio State University, Columbia, Ohio.

Brandwein, Paul F., *et al.* *Ekistics : A Handbook for Curriculum Development in Conservation and Environmental Education*, 1971. California State Dept. of Education, Sacramento.

Butterfield, Charles H. *Values and Biology*, 1983. J. Weston Walch Pub., Portland, Maine.

Butterfield, Charles H., *et al.* *Know Nukes : A Nuclear Power Issues Curriculum Project*, 1982. Antioch/New England Graduate School, Keene, N.H.

Chazan, Barry I. and Jonas F. Soltis (eds.). *Moral Education*, 1973. Columbia Univ. Press, N.Y.

Freire, Paulo. *Pedagogy of the Oppressed*, 1974. The Seabury Press, N.Y.

Goldbecker, Sheralyn S. *Values Teaching*, 1976. National Education Association, Wash., D.C.

Hall, Robert T. and John U. Davis. *Moral Education in Theory and Practice*, 1975. Prometheus Books, Buffalo, N.Y.

Hawley, Robert C. *Value Exploration Through Role-Playing*, 1974. Education Research Associates, Amherst, Mass.

King, Davis C. *Global Perspectives : A Humanistic Influence on the Curriculum*, 1976. Center for Global Perspectives, New York, N.Y.

Knapp, Clifford E. and Joel Goodman. *Humanizing Environmental Education : A Guide for Leading Nature and Human Nature Activities*, 1981. American Camping Assoc., Martinsville, IN.

Mager, Robert F. *Preparing Instructional Objectives*, 1975. Fearon Pub., Inc., Belmont, CA.

Mann, Lori D. and William B. Stapp. *Thinking Globally and Acting Locally : Environmental Education Teaching Activities*, 1982. ERIC, Ohio State University, Columbus, Ohio.

Newton, David E. *Science and Social Issues*, 1983. J. Weston Walch, Pub., Portland, Maine.

Raths, Louis, Merrill Harmin and Sidney B. Simon. *Values and Teaching*, 1966. Charles E. Merrill Pub. Co., Columbus, Ohio.

Rich, John Martin. *Education and Human Values*, 1968. Addison-Wesley Pub. Co., Inc., Philippines.

Silver, Michael. *Values Education*, 1976. National Education Ass'n, Wash., D.C.

Simon, Sidney B. ; Leland W. Howe and Howard Kirschenbaum. *Values Clarification : A Handbook of Practical Strategies for Teachers and Students*, 1978. Hart Pub. Co., Inc., N.Y.

Sloan, Douglas (ed.). *Education and Values*, 1980. Teachers College Press, N.Y.

Stapp, William B. and Dorothy A. Cox. *Environmental Education Activities Manual*, 1979. Available from authors at 32493 Shady Ridge Drive, Farmington Hills, Michigan, 48018.

Superka, D.P. ; C. Ahren ; J.E. Hedstrom ; L.J. Ford and P.L. Johnson. *Values Education Sourcebook*, 1976. Social Science Education Consortium, ERIC Clearinghouse for Social Studies/Social Science Education, Columbus, Ohio.

Swan, James A. and William B. Stapp. *Environmental Education*, 1979. John Wiley & Sons, Inc., N.Y.

Van Matre, Steven. *Acclimatizing : A Personal and Reflective Approach to a Natural Relationship*, 1974. Am. Camping Association, Martinsville, Ind.

Van Matre, Steven. *Sunship Earth*, 1979. American Camping Association, Martinsville, Ind.

Articles

Allen, Rodney F. "But the Earth Abideth Forever : Values in Environmental Education", 1975. National Council for Geographical Education (Instructional Activity Series).

Allen, Rodney F. "Environmental Education as Telling Our Stories", 1975. National Council for Geographical Education.

Allen, Rodney F. "The World is so Beautiful...Feelings and Attitudes in Environmental Education", 1975. National Council for Geographical Education, Oak Park, Ill.

Arth, A.A. and A.F. Groden. "Environmental Awareness Plot", *Elementary School Journal*, 1974, 75:158-161.

Baer, Richard A., Jr. "Our Need to Control : Implications for Environmental Education", *American Biology Teacher*, 1976, 38:473-476.

Caduto, Michael J. "A Review of Environmental Values Education", *Journal of Environmental Education*, 14(3):13-21 (Spring) 1983.

Caduto, Michael J. "Toward a Comprehensive Strategy for Environmental Values Education", *Journal of Environmental Education*, 14(4):12-18 (Summer) 1983.

Caduto, Michael J. "A Teacher Training Model and Educational Guidelines for Environmental Values Education," *Journal of Environmental Education*, 16(2):30-34 (Winter) 1984-1985.

Gengi, A.A. and J.J. Santuosso. "Values Clarification for Ecology", *Science Teacher*, 1974, 41:37-39.

Gussow, Alan. "A Sense of Place", *The Communicator*, 1975. New York State Outdoor Education Association.

Harshman, R. "Value Education Processes for an Environmental Education Program", *J. Environmental Education*, 1978-1979, 10:30-34.

Kendall, O.L. "Building an Ecological Conscience", *Science and Child*, 1977, 14:25-27.

Knapp, Clifford E. "Values that Make Better Camping", *Camping Magazine*, 1979, 51(5):8-9.

Knapp, Clifford E. "A Curriculum Model for Environmental Values Education", *Journal of Environmental Education*, 14(3):22-26 (Spring) 1983.

Knapp, Clifford E. "Developing an Environmental Ethic : A Values Education Model", *Science Activities*, pp.39-42, April/May, 1980.

Knapp, Clifford E. "Outdoor Environmental Values Clarification", *The Communicator : J. New York State Outdoor Education Association*, 1975,7(1):9-11.

Lamb, William. "Classroom Environmental Value Clarification", *J. Environmental Education*, 1975, 6(4):14-17.

Mallet, J.J. "But a Tree Can't Talk : Personification can Help Children Develop Healthy Environmental Responses", *Instructor*, 1974, 84:52-53.

Miles, J.C. "Study of Values in Environmental Education", *J. Environmental Education*, 1977, 3:165-174.

Stahl, Robert J. "Valuing Exercises for the Environmental Education Classroom", 1976. ERIC ED 141 094, Columbus, Ohio.

Stapp, William B. "An Instructional Program Approach to Environmental Education (K-12) - Based on an Action Model". Revised, unpublished manuscript, 1980, University of Michigan, School of Natural Resources.

Stapp, William B. "Environmental Encounters", *Environmental Education*, 1970, 2(1):35-41.

Stronck, C.R. "Affective Domain in Environmental Education", *American Biology Teacher*, 1974, 36:107-109.